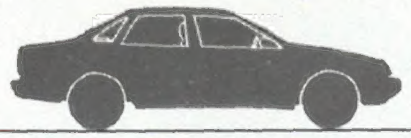
Smithsonian

December 1986

The transcendent world of Fra Angelico (p. 46): here, his *Virgin and Child*

FORD TAURUS SEDAN AND WAGON



Powertrain:	2.5L 4-cylinder EFI Front-wheel drive Transaxles: Auto CLC or 5-Speed Manual
	3.0L V-6 Multiple Port Fuel Injection Front-wheel drive Transaxle: Auto Overdrive
Facts and Figures:	Passenger Capacity: Sedan—Up to Six Wagon—Up to Eight with optional third seat
	Luggage Capacity: Sedan—17.0 cubic feet* Wagon—81.0 cubic feet*
Major Standard Equipment:	The MT-5 (5-speed manual) and GL include an electronic AM/FM stereo, 4-way front headrests, interval wipers, and many other standard features.
	The LX (pictured) includes air conditioning, front seats with power lumbar supports, power windows/door locks, and much more.
	All Wagons include a 60/40 split-folding second seat, two-way liftgate, and roof-mounted luggage rack.
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*Based on EPA Cargo Volume Index.

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▶INTERIOR DESIGN. Taurus seats are designed to satisfy two important criteria. One: For refreshing comfort during long drives. Two: For firm lateral support in turns.

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▶THOROUGH DESIGN. To carry a lot of cargo, the trunk is deep and commodious. To carry two bags of groceries, most models include an elasticized net to keep them upright. When it rains, Taurus has 20″ wipers to clear the windshield. And for bright days, a secondary driver's visor, on most models, provides simultaneous front and side protection from the sun.

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TAURUS
Ford

December 1986

Smithsonian

Volume 17, Number 9

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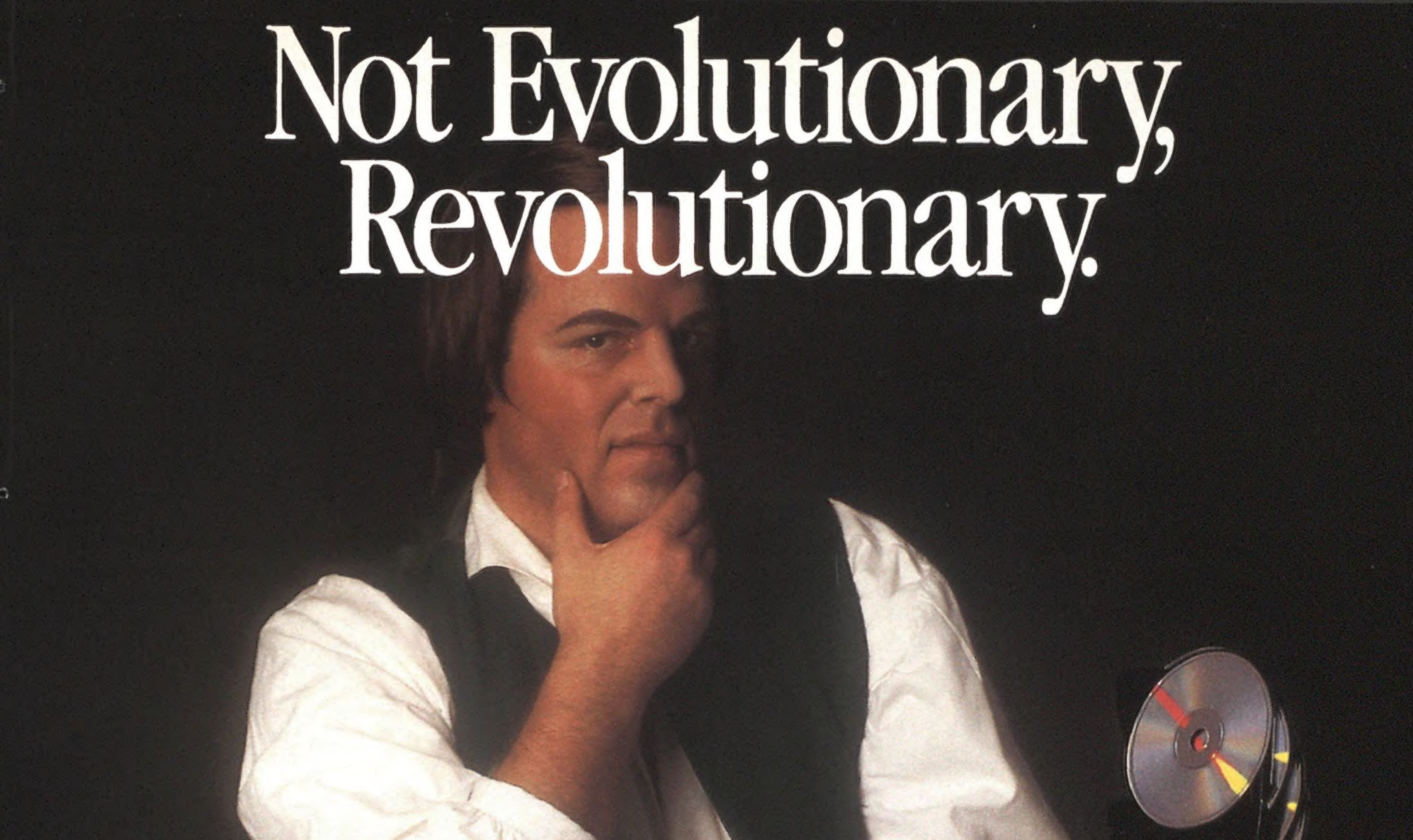

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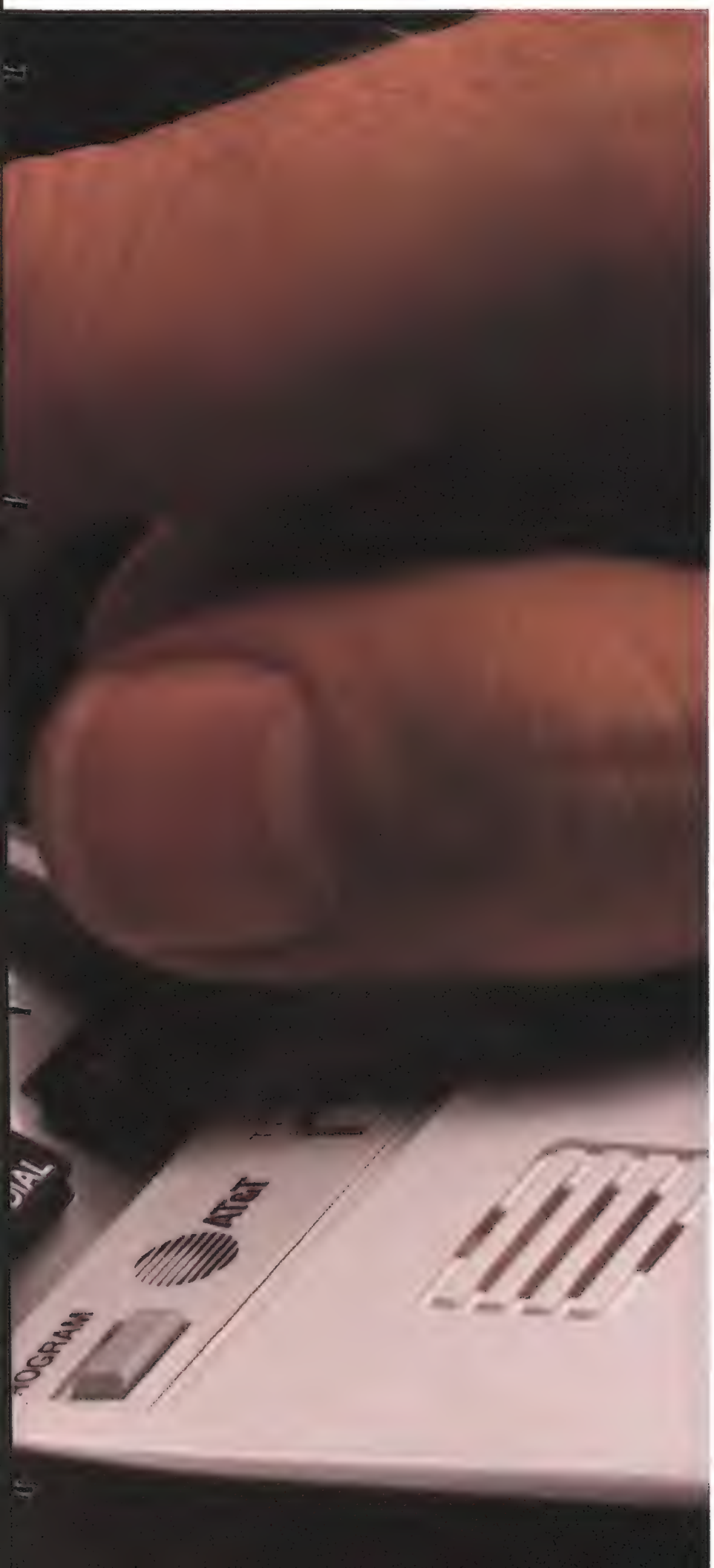

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Secretary Adams' comments

Smithsonian horizons

The career of David Rittenhouse shows how much easier scientists have it today with our interconnected networks

Discovering new unifying themes within the Smithsonian is sometimes as rewarding as it is unexpected. Take a portrait of David Rittenhouse by Charles Willson Peale, currently hanging in the National Portrait Gallery (NPG). Peale shows Rittenhouse (1732-96), who was first a clock- and instrument maker and later a distinguished astronomer, seated at a telescope. The picture is there on a generous loan from Stanley P. Sax, a Michigan collector of early Americana (including, hardly coincidentally, clocks and instruments). Upon recently placing a winning bid for it, Sax fortunately (for us) got in touch with the NPG, where Lillian Miller is editor of the Peale papers. One thing led to another, and we are delighted that many visitors can for the present have a look at it.

Of Pennsylvania Mennonite and Quaker farming stock, Rittenhouse received little schooling and was principally stimulated by a chest of books and tools, the gift of a relative. He mastered Newton's *Principia* and calculus, became a clockmaker, then went on to telescopes, and won lasting respect throughout the Colonies for the accuracy of his boundary surveys. Similar accuracy was a hallmark of his observations of solar and lunar eclipses, and of the transits and eclipses of comets, planets and their satellites. Most notable was his observation of the transit of Venus across the face of the sun in 1769.

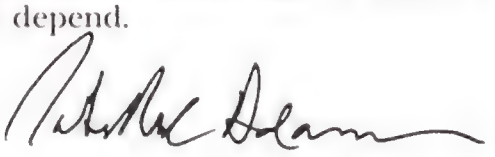
His other scientific and technical contributions included investigations into the motion of pendulums, proposals for standardized measures, experimentation with magnetism, electricity and methods of rifling, and supervision of the casting of cannon and the manufacture of saltpeter during the American Revolution. He died appropriately full of honors, successor to Benjamin Franklin as president of the American Philosophical Society, first director of the U.S. Mint and, in the last year of his life, a foreign member of the Royal Society of London.

Noteworthy as all this is, what beyond this valuable painting links Rittenhouse's career with the larger program of the Smithsonian? For one thing, his scientific instruments have long been sought for the collections of the National Museum of American History; in fact, NMAH acquired a significant Rittenhouse clock at the same sale in which the Peale painting was offered. And the most recent and authoritative biography of Rittenhouse was written by former NMAH director Brooke Hindle—a further connection between two of the Smithsonian's museums.

Yet in celebrating an individual whom we would welcome in our own society, it is important not to lose sight of the vastly different setting in which he lived and worked. We rightly see him as a scientist, but a purely scientific career, of the kind that many quite routinely pursue today, lay beyond his horizons of possibility. Institutions devoted solely to research did not yet exist, and talented, public-spirited persons were in any case constantly in demand in a restive, young and rapidly growing country. Joining his friend Peale as a republican activist during the Revolution, he was repeatedly a public official and member of a plethora of official boards and commissions.

Dr. Benjamin Rush captured this readiness to accept broad public as well as intellectual responsibility in his memorial eulogy of Rittenhouse. Turning the latter's lack of formal education into a positive advantage, Rush suggested that "had the usual forms of a public education in the United States been imposed upon him, instead of revolving through life in a planetary orbit, he would probably have consumed the force of his genius by fluttering around the blaze of an evening taper." Yet that nice turn of phrase cannot conceal the cost in time of what he had to learn late or not at all. For most of his life it also meant that he lacked a network of stimulating colleagues. Although he exemplifies the spirit of the Enlightenment, we can surmise the frustrating difficulties an unknown young American would have had to overcome in achieving recognition by its European protagonists.

It comes to this: the exceptionality of a David Rittenhouse touches directly on the seminal importance for us of James Smithson's concern for the "increase and diffusion of knowledge." Research and its dissemination and utilization, private thought and public action, form a continuous and necessarily interconnected web. In bringing increase and diffusion together into what became a unitary vision of the Smithsonian's program, Smithson was staking his faith on the growing interconnectedness of human life—and on the advancing breadth as well as depth of knowledge on which it would depend.



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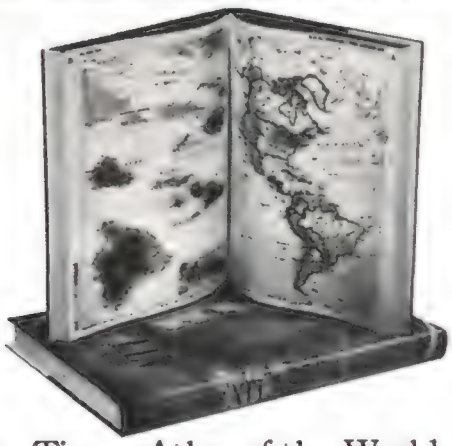

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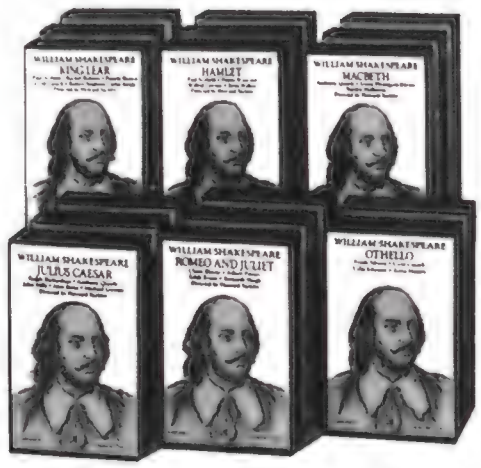

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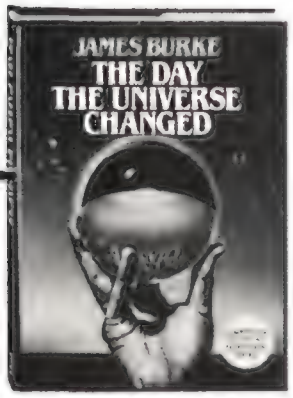

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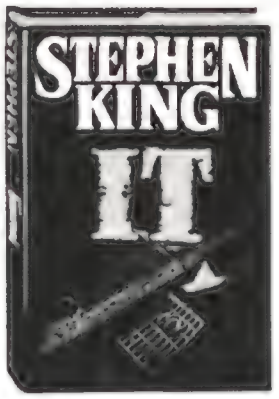

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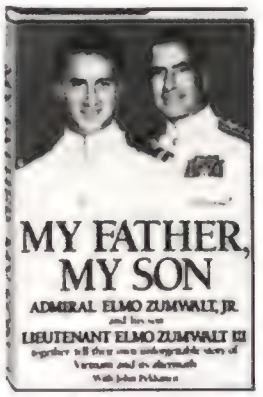

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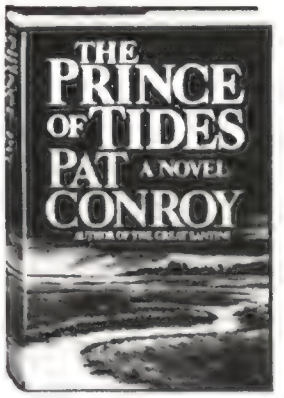

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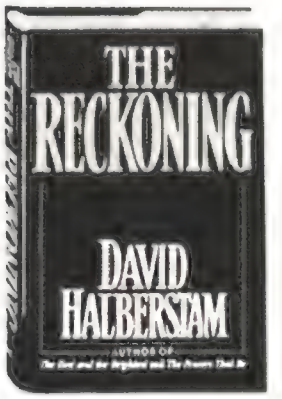

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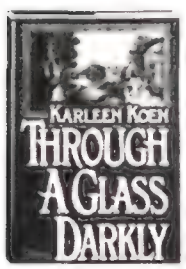

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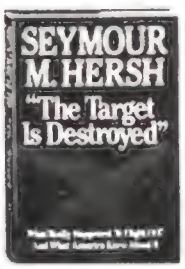

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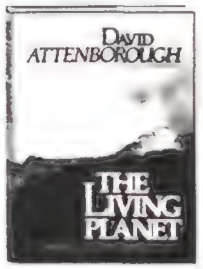

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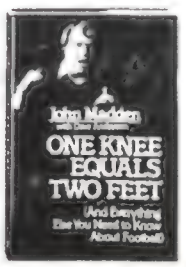

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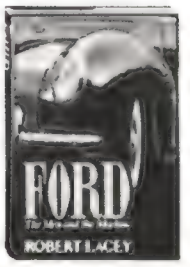

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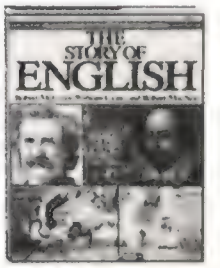

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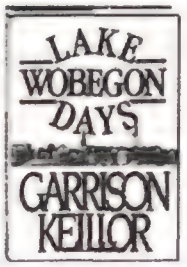

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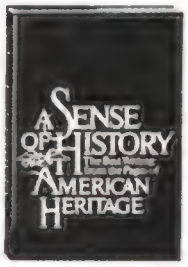

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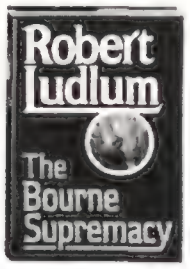

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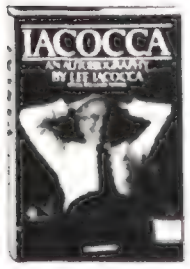

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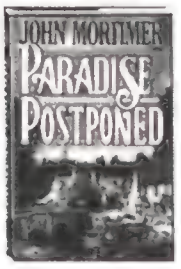

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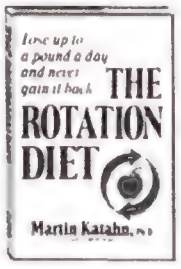

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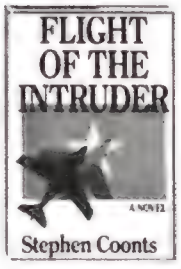

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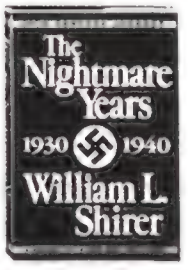

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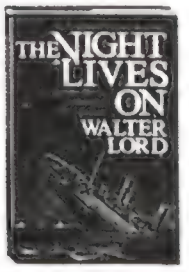

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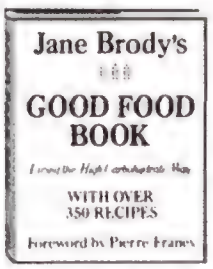

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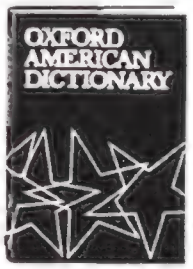

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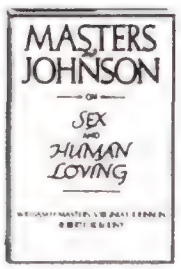

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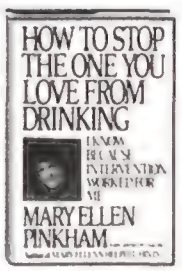

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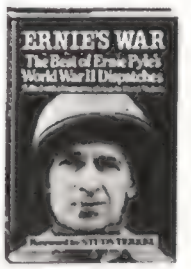

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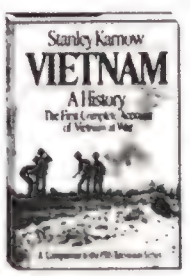

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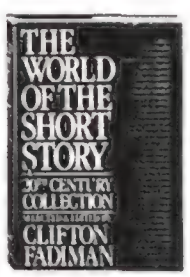

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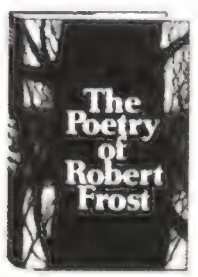

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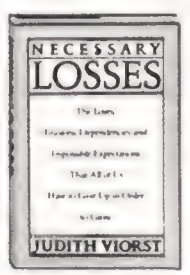

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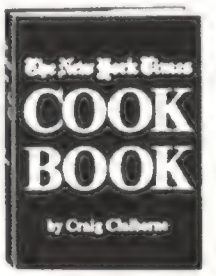

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Letters to the Editor

Sitka herring frenzy

Dear Sir: As an adventurous young woman in the mid-1960s, I hitchhiked out of Seattle aboard a purse seiner bound for what was then known as the annual Alaska Herring Egg Pick. And so I relished Jon Krakauer's October account of the 1986 harvest. In 1966, herring eggs were hand harvested from kelp leaves just below the water's surface rather than obtained by netting live fish. At least two men were killed and numerous injured during the few hours which constituted "my" three-part herring-egg harvest melee in Alaska's coastal waters.

The end, though, was and is the same: big bucks, and all the competitive maneuvering accompanying such high stakes. Two decades have not diminished the natural color and raw tension of the adventure.
Melody G. Jameson
Balm, Florida

Dear Sir: Your article gave us the impression that the Japanese buy the whole fish, so, inasmuch as it is the roe they prize, what becomes of the males and the bodies of the females after the roe is removed?
Catherine Gaines
Kansas City, Missouri
Shipped to Japan frozen, the herring wind up on Japanese tables, usually cooked with vegetables. Less than five percent, the very smallest fish, are sent to the state of Washington to be used as fertilizer. Ed.

Jearl Walker

Dear Sir: Where was Jearl Walker when *we* took science courses? What an inspiration to all students—and teachers, of which Sandi is one. This article should be mandatory reading for every teacher.
Joe and Sandi Zeldin
Sherman Oaks, California

Dear Sir: As a student, I understand the importance of a teacher as interesting and entertaining as Mr. Walker. He is indeed a treasure for Cleveland State. The more instructors there are like him, the better it is for American education.
Scott D. Saxon
White Oak, Pennsylvania

Dear Sir: An accolade for "Old Jearl" Walker's teaching methods—may his followers be legion.

In the early 1920s, the principal of Stuyvesant High School in New York City, Dr. Von Nardroff, performed three memorable demonstrations in the auditorium before the entire student body.

The first illustrated the insulation of vaporizing moisture. On stage was a pot of molten iron and a sandbox to catch overflow. The good doctor poured ether over his hand, then had the molten metal poured over it, with the same resulting dramatic effect as Dr. Walker's experiment with molten lead.

The second involved the use of a stroboscope. A wheel rotating at a constant speed was made to appear motionless, to spin backward, or to speed faster than its actual speed.

The third involved a pendulum suspended from the ceiling, its shadow projected onto a screen, to illustrate the rotation of the Earth.

Sixty years have passed since I saw these demonstrations and they are just as vivid as if they had occurred last month.
Arthur Cadavero
Edison, New Jersey

Salvador Dali

Dear Sir: Meryle Secrest failed to mention that the Salvador Dali Museum in St. Petersburg, Florida, has the largest collection of Dali's work in the world.

I can guarantee that no one who takes its guided tour will "go out no wiser than they came in." I will further guarantee that you will not be exposed to patrons with "exhausted expressions . . . drinking Cokes to the accompaniment of deafening rock music" and garbage cans "overflowing with bottles and plastic cups."

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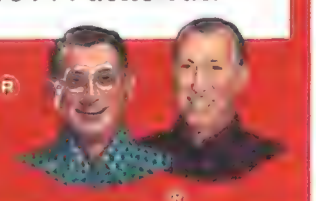

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A visit to the St. Petersburg museum will prove the truth of the paraphrased statement: "Try it, you'll like him."
Gordon J. Wavrek, Docent
Salvador Dali Museum
St. Petersburg, Florida

Dear Sir: In the 1950s I, a young office worker, became familiar with another side of the great Surrealist artist.

Dali's jewelers, Alemany—a Dali clone, mustache and all—and Ertman, had an office in the Squibb Building on Fifth Avenue. My office was on the same floor and a friend was their girl Friday. She and I would hand deliver Dali's jewelry, already famous for its telephones, hearts and twisted watches, to a clientele on Fifth and Park avenues.

We young girls didn't appreciate the artistry of what, to our eyes, were merely unusual and unfathomable "trinkets."
Shirley Olason
Charleston, South Carolina

Floral radiography

Dear Sir: Dr. Albert Richards' x-ray pictures of flowers especially caught my eye, because my friend Vern West, an x-ray technician who is now retired and living in Paradise, California, did similar work 42 years ago [below], using an old Fischer dental x-ray unit from the 1920s.

His work did not have wide circulation; there was one showing at an art exhibition at California State University in Chico, and he made gifts of many of his prints to friends.
E. J. Mallory, DDS
Oroville, California

Master of possibilities: André Previn.

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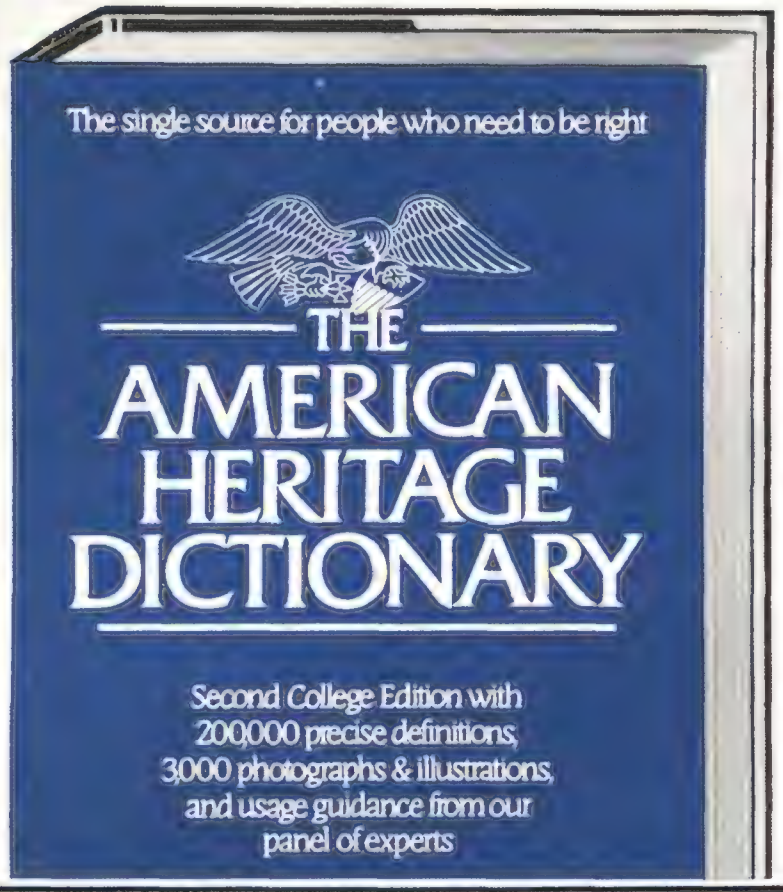

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America's Charters of Freedom

Dear Sir: As a teacher of U.S. history, I have been at a loss to answer a student's question: "If we sent the Declaration of Independence to King George III, why is it in Washington? Did he send it back? If so, is there a copy in England?"
Susan Coltrin
Pasadena, California
There seems to be considerable published misinformation about the Declaration of Independence. According to the National Archives, there is, and was, only one signed copy. It was not sent to King George III. On the night of July 4, 1776, about 200 printed copies, known as Dunlap Broadsides, were made, of which 21 are known to exist. The Archives believes these 200 went to the Colonies, but that possibly a subsequent copy was sent to George III. At any rate, there are two Dunlaps in Britain today, one among the Admiralty Records and the other under State Papers Colonial. Ed.

Helping Hands monkeys

Dear Sir: Your article brought poignant memories. My father, increasingly disabled by multiple sclerosis, was unable toward the end of his life to do anything for himself. Even turning a page was a great, and at times impossible, effort. How much the help of such a monkey would have meant to him and to my family is simply beyond words. I only hope that the Helping Hands program will continue to grow and to serve the disabled.
Andrea DeCapua
Tuckahoe, New York

Phenomena

Dear Sir: John P. Wiley jr. took me back a few years—to the summer of 1910, before Rocky Mountain National Park existed. I was learning my ABCs from the print on an upended case of Columbine canned milk, which my father, a district forest ranger, was using as a sawhorse for cutting lumber at the old Mill Creek Ranger Station, now in the park.

That year I also spent a night atop Flattop Mountain, over which my father was then building a trail toward Grand Junction.

Now I shall not be content until I have revisited Eagle Cliff Mountain and located the William Allen White cabin, which has eluded me on previous trips.
Bernarr Bates
San Mateo, California

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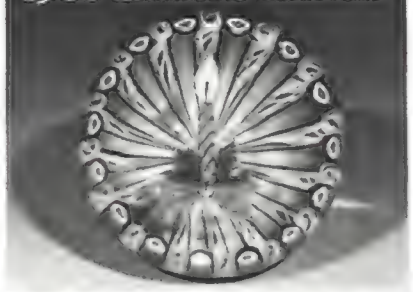

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Around the Mall and beyond

Workers at Museum of American Art take down block and tackle used in installation of Rosenquist's giant-size *Star Thief.*

Question: How do you display an 86-foot-long painting in a gallery with walls only a little more than 20 feet in length? Answer: You bend it around the corners. But you wouldn't know unless you've seen the extraordinary, almost overwhelming exhibit of James Rosenquist's giant paintings at the National Museum of American Art.

It's his 10-by-86-foot *F-111* (which sold for a resounding Rosenquist record of $2.09 million at a recent Sotheby's auction) that hangs on all four walls of a special room on the third floor. Special room? Everything having to do with Rosenquist's titanic productions has to be special. In the physical size of his individual works, he's the biggest thing that's ever happened to the Museum of American Art. It managed to hang his paintings dramatically by building that *F-111* room and clearing the broad area surrounding it of existing displays. The staff even built a massive wall across some of the columns of the famous Lincoln Gallery—where President Lincoln danced at his 1865 Inaugural ball—to hold *Star Thief* (above), another Rosenquist giant, 17 feet tall and 46 feet long.

Famous artists may arise from all sorts of unlikely backgrounds. And James Rosenquist, with his strange, slick, disturbing, monstrously huge images of planes, of smiles with white, even teeth and lustrous eyes, of glistening drops of water or Coke on a cold bottle, of endless and familiar industrial items, arose from the ranks of the billboard painters.

Like a lot of other artists, Rosenquist recognized his talent early. He was born in 1933 in North Dakota, and dabbled, unwillingly, with an education in Minnesota. Like other kids, he built model planes and discovered girls and dreamed of going off to exotic places. But, like other artists, he saw the details of life differently, warped and enhanced by imagination. He still tells stories about the people he met as a youngster—the 700-pound boy with thighs "as big around as whiskey barrels," the old astrologer "who wore a gown with stars and moons and a pointed hat"—and you're not sure where imagination takes over from reality. And of course, like other artists, Rosenquist always felt compelled to paint what he saw, real or not.

Much of the time he wasn't allowed to. The summer after his freshman year at the University of Minnesota, he saw an ad—"Wanted: Artist"—and went for it. On the strength of his sketches, he was hired to paint orange-and-black Phillips 66 gasoline signs in a dozen-plus Iowa towns. That got him started on the billboard route. From Black River Falls, Wisconsin, to high above Times Square, James Rosenquist painted Cokes, Corby's whiskey bottles, Davy Crockett—King of the Wild Frontier, Kirk Douglas in *The Vikings* ("I painted the portrait about eight feet high, saliva on his lips, tears in his eyes, blush on his cheeks") and finally an ad for *On the Beach* that drove him to get his talent off the beach and into his own kind of work.

So he's a sign painter who tries, in his own words, "to put layers of feeling in a picture plane and then have those feelings seep out as slowly as possible . . . ." And if you look for more meaning than that in *Star Thief* when you go see it at the Museum of American Art—the show is on through January 11—you could become confused, as was a museum guard who watched the enormous painting being hung on its specially built wall.

"They should hang it on its side, so the girl's upright," said the guard. "Then, at least, her head would be on top. And I don't like the bacon. I don't eat the stuff anymore. Cholesterol."

"Mr. Borman didn't like the bacon, either," said Paul Simmons, an old friend and technical assistant to James Rosenquist. He was recalling the time in 1981 when *Star Thief* was installed at Miami's International Airport. And former astronaut Frank Borman, president of Eastern Airlines, said it was a lot of bunk—"no correlation . . . between the artist's depiction and the real thing."

Well, no. But the huge painting does have a correlation to life at this time, which is the time of "Star Wars," and aggressive commercialism. And that's about as close as any ordinary dolt should venture toward explaining one of Rosenquist's enormous works.

The problem of hanging them at this great old Smithsonian building—the Old Patent Office—was more down my line. I had bustled over to the museum the moment I'd got word that the 1,200-odd-pound *Star Thief* was to be hung. I was as avid as a medieval pickpocket to reach

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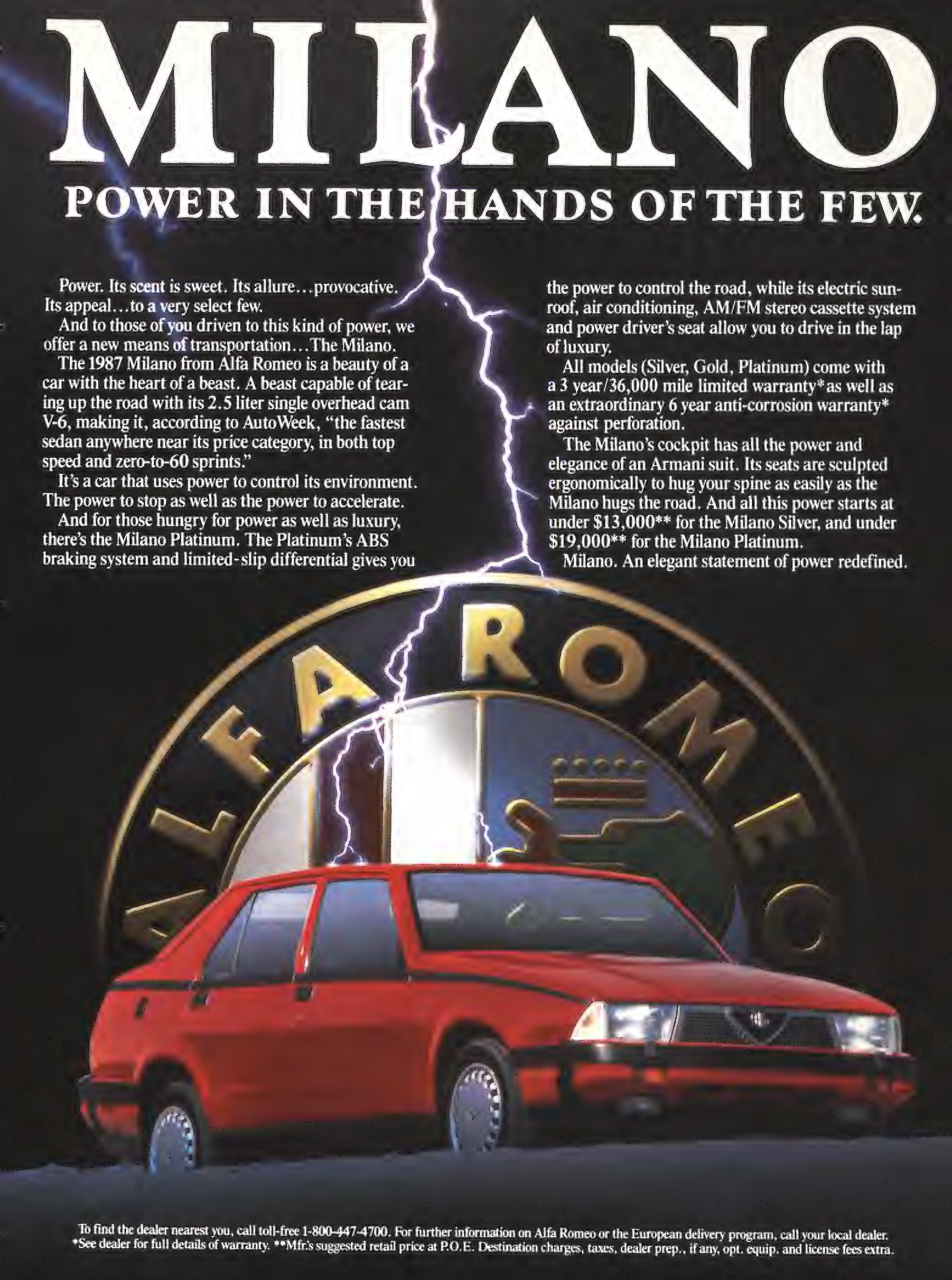

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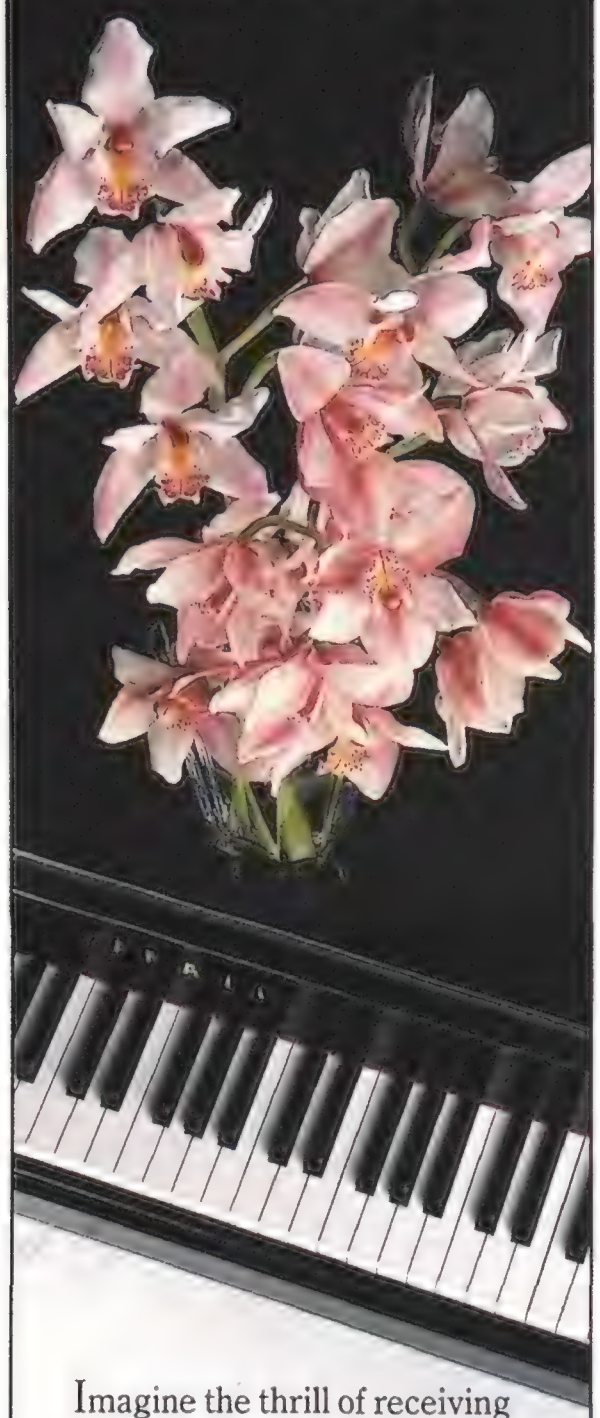

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the execution on time. And so, panting, I came upon the guard and Paul Simmons, and saw the great painting inching into place on its "billboard" wall.

When you come upon it, on the third floor of the Museum of American Art, you first see a blaze of color beyond the arched entrance to the Lincoln Gallery. Then, as you approach, you find that the arch neatly frames the entire 46-foot length. And you'd best view it at the moment you see the whole thing. Otherwise you'll have to get closer, and you'll lose perspective. As a newspaper story once noted, Rosenquist is "one of the few painters in the world who must walk two or three blocks away during his lunch hour to scale the size relationships of his supercolossal figures."

He did this painting on 33 panels, and I watched them being fitted together, row after row, in the pattern a bricklayer uses putting up a wall. Bolts went through the frames behind the canvas and were tightened to bring the panels close together and eliminate the gaps. Paul Simmons pointed out that there was the bottom row to go, and then the whole shebang would be raised some six inches off the floor.

Raised? Three separate block and tackles held it up, but they left only limited room for the painting to rise. When the time came, Paul and two other helpers seized the tackles. Their feet slid on the smooth marble floor as they threw their weight on the ropes. With an echoing shriek from the pulley blocks, the painting came up a few inches . . . a few inches more . . . . Then it stopped, still too low for the last level of panels. Sure enough, the blocks had come together—"chockablock," as sailors rightly express it—with still almost a foot needed to get the monster into place.

Paul Simmons is a little bent and considerably bald, with weathered face and gnarled, wise hands. He's been retired for years from his job as an electrician, but he can't stop himself from working whenever he faces a decently provocative challenge. And his neighbor, Jim Rosenquist, offers him plenty of those.

Including this one. "We'll hold her up with chains while we raise the pulleys," he explained to me. "Then we'll take those chains off the hooks and replace them with cable. That way, we can slip the cable right through the sheaves and that will give us a lot more inches. And we'll hook 'em onto the frames lower down. And if that isn't enough, why, I've got a set of real nice clevises all ready to use."

I'd worked out "sheave"—pulley—but "clevis" slowed me down for a moment until I remembered construction jobs during summer vacations. It's a U-shaped strap of metal that you bolt onto an object so you can lift it or tow it.

"Once we get her up," Paul went on, "we'll chain her in place and take away the block and tackles. Then we can shore her up on the bottom if we have to, and paint the shoring. We'll put corner plates at the frame corners to get the wobble out of her. See how she wobbles now? By the time we're finished, Jim will be real pleased. She'll look real purty."

Relieved, I went to the *F-111* room to see how the 86-footer had made out. Awesomely, is how. *F-111* starts with aluminum panels with a wallpaper design on them, then moves on to such items as an angel food cake, a new, whitewall Firestone tire, an electric light bulb, a fast-food plastic fork, a gleaming hair dryer with a cutesy little blonde girl emerging from under it, a beach umbrella, a nuclear explosion and a mess of canned spaghetti in tomato sauce. Behind the whole thing is a vague outline of a plane. And by the time you reach the nose, you're back at the door.

What's it mean? Are you kidding? Judith Goldman in her marvelous book about Rosenquist, available at the show, says that she once asked him if the buyers of a recently commissioned mural "understood" his ideas for it. "Rosenquist," she writes, "finds the question beside the point and not wanting to be impolite, steers the conversation in another direction."

All I know is, he did *F-111* in 1965 (remember Vietnam?) and it's one of the things that cinched his standing as a big gun in the Pop Art movement of the '60s. If you see the show, you can hardly miss the impact of this painting, like it or not. And you can hardly miss seeing the show if you go past the museum because a billboard, 12 feet high and 56 feet long, now encompasses the G Street entrance with a massive poster of the artist's work—fragments from many paintings—to lure you in. Rosenquist designed it just for the Smithsonian show.

Rollins Outdoor Advertising produced the billboard and set a couple of sign painters to work for five days, painting its 18 sections. I don't know who the sign painters were, but judging by James Rosenquist, we may hear from them later.

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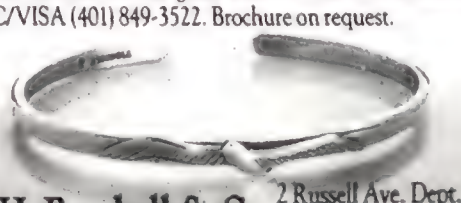

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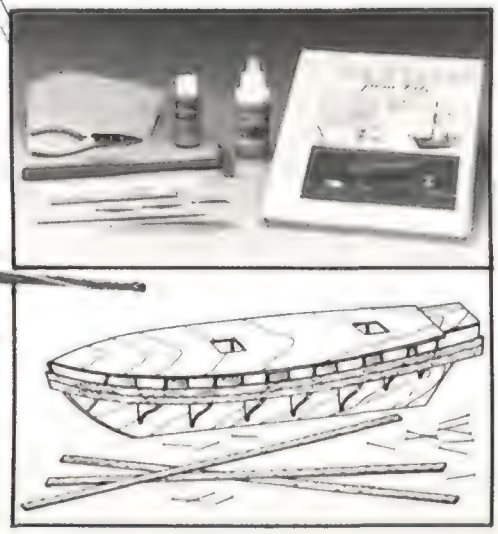

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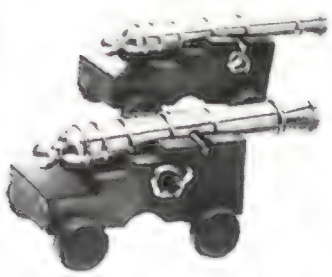

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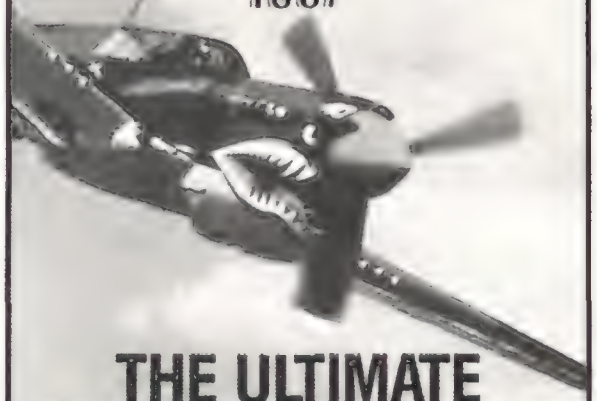

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Cruising low over the countryside once was something one could learn to do.

and DC-3s, two of my favorite flying machines. Yet the message running through their first four issues is that the era of the weekend flyer is ending: soon it will be too late to tootle out to the local airfield and learn how to drive into the sky. In issue after issue, the magazine tells of manufacturers, including my beloved Piper, getting out of the small-plane business; of the numbers of pilots falling precipitously; of young people turning their backs on aviation.

The very first issue last April tolled the knell for the small, single-engine plane in which tens of thousands of pilots learned to fly. Sales have dropped from 17,811 in 1978 (the high point in recent years) to just 2,032 in 1985. A later issue printed a one-paragraph news item on Cessna's decision to halt production of all piston-powered planes until at least October 1987 and probably forever. The latest issue is equally ominous: in just five years the number of nonmilitary pilots in this country dropped from 827,000 to 709,000 in 1985. Falling fastest is the number of student pilots. "All over the country," the article says, "people in droves are not signing up to learn to fly."

What's going on? What has happened to the dream of Icarus, of Leonardo, of every earthbound wage slave who would "slip the surly bonds of Earth and dance the skies on laughter-silvered wings"? Will we divide ourselves into professional pilots on one side and all the rest of us on the other, flatlanders confined to two dimensions?

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The articles suggest reasons for the decline. The rapidly rising cost of liability insurance makes it even more expensive to build or fly planes. Layers and layers of regulations take the fun out of it. And manufacturers have concentrated their creative energies so much on larger, twin-engine business aircraft that the little planes have been left unimproved for decades.

Yet the dream goes on. Some of us flatlanders cannot rid ourselves of a sense of wonder that people can fly. When I was three or four, my father would take me to Newark Airport to watch the silver airliners take off and land. Now, almost half a century later, I go to a park just upriver from the main runway at Washington's National Airport to watch the jets glide in over my head or take off right at me, their exhaust splitting the air.

My father took me to other fields, too, where little cloth-covered planes bounced over the grass and into the air. My most vivid memory is of standing next to a red plane, its engine running, the pilot telling me to get in. I refused, because I knew that the second I put one leg in that fragile cockpit the plane would go racing away, tearing off my leg. Finally I succumbed, and for the first time saw trees from above.

By the age of 12 fear was fading, but not the fascination. My friends and I learned to hang around the local flying club, looking eager and well-behaved, hoping to cadge rides. Some pilots would take us for safe, sensible rides: a quick climb to a prudent altitude and then a stately circling of the countryside. Others were the daredevils we wanted to be, flying so low along the beach that swimmers would dive underwater.

Nowadays my flying is pretty much confined to commercial airlines, the very antithesis of flying for fun. Yet nothing they can do can dilute the magic of the moment when you are no longer rolling along the ground but have lifted into the air, concrete and hangars and trees falling away under you. Nothing can take away the magic of leaving an airport that lies in cold, wet grayness under a heavy overcast, flying for long minutes through the clouds, and then bursting into bright sunshine and the blinding white of the cloud tops, like coming out of a dark room into a snowscape.

One of the secrets of happiness, some philosophers say, is to know when you are happy. It can be an effort to keep reminding yourself. Commercial flying is like that. If you told me when I was 12 that someday I would be seven miles above the Earth, flying along at 600 miles per hour, I would have laughed at the joke. Now I'm lucky enough to do that three or four times a year, and sometimes I forget I'm happy.

The adventure is flawed even before you board. Check-in lines, x-ray searches, overcrowded departure lounges take some of the edge off. You board through a chute that makes it impossible to see the aircraft, and squeeze into a seat that shrinks every year. Most of your fellow passengers are oblivious to flight, busying themselves with piles of paperwork, thick novels or the fine art of magazine flipping. Flight attendants constantly push carts up and down the narrow aisles, selling drinks and serving snacks. Pilots, apparently responding to passenger demand, make fewer and fewer announcements about how high you are

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and how fast you are going or what the rivers and cities are you see sliding by the wing. Alone you stare out the window, wondering what invisible forces produced those cloud formations, what geologic power sculpted the shapes you see on the ground.

It could be different. Once I flew on an Air Force transport, a plane that had been modified to observe nuclear tests. It had quartz windows along the top, and a cargo hatch with windows around the curve of the plane from shoulder to knee, so we could kneel or sit on the floor and look down at the landscape flowing underneath. Each seat had headphones; with a twist of the dial we could listen to the pilots as they talked to each other or to the ground. (It concentrates the mind to hear them discuss who will do what if engines fail on takeoff.) Best of all, we were welcome to wander up to the flight deck and sit with pilots and navigator. There is no view like it in the world: looking out and ahead gives a true sense of motion over the ground, of sliding along between cloud layers, of driving to the horizon. At times the plane feels as solid, as steady in its path through the sky as a locomotive.

The brief glimpse of the cockpit you get while boarding a commercial airliner can be intimidating: a nightmare of gauges, screens, dials and switches. But when you can sit behind the pilots, as we did on that Air Force plane, some of it begins to make sense. You begin to see which instruments indicate what the plane is doing, which show how the engines are doing, which involve radios and navigation. It becomes downright comfortable when you realize that the top of the instrument panel is a dusty, stained metal dashboard where the pilots throw their charts just like you do maps in the old family sedan.

That Air Force 707, a glass-bottomed boat of the air, is the stuff of fantasy—a modern version of Captain Nemo's submarine. But for the moment at least, small planes—in which everybody sits on the flight deck—are still around. It is still possible to sit in the front seat and fly it yourself. The possibility of flying is like that of seeing a blue whale: it is exciting to know that you can, even if you never do. After World War II, the popular wisdom was that everyone would fly. That never came to pass, but it is still true that everybody can. One of my sons has done it; I'll never forget that gray day when a suddenly small and fragile-looking white plane sped down a dark runway and swooped up into the air, with a man who had once been my little boy at the controls.

Someday, when I no longer owe my soul to college bursars, I'll put together the money for a proper cap, aviator sunglasses and flight lessons. I'll sit in front, pull back gently on the wheel, and move from Earth to sky. In the meantime, I'll cadge rides where I can, whether with a Nature Conservancy pilot along the Platte River (*Phenomena*, June 1986) or a balloon pilot in Virginia. I'll loiter in the park at National Airport, watching the angle the jets make with the runway as they land in a crosswind. I'll go into the drugstores in neighborhoods where nobody knows me to buy, furtively, the latest copy of *Flying* magazine. And I'll hope that our colleagues at *Air & Space* don't bring out an issue announcing that it is too late.

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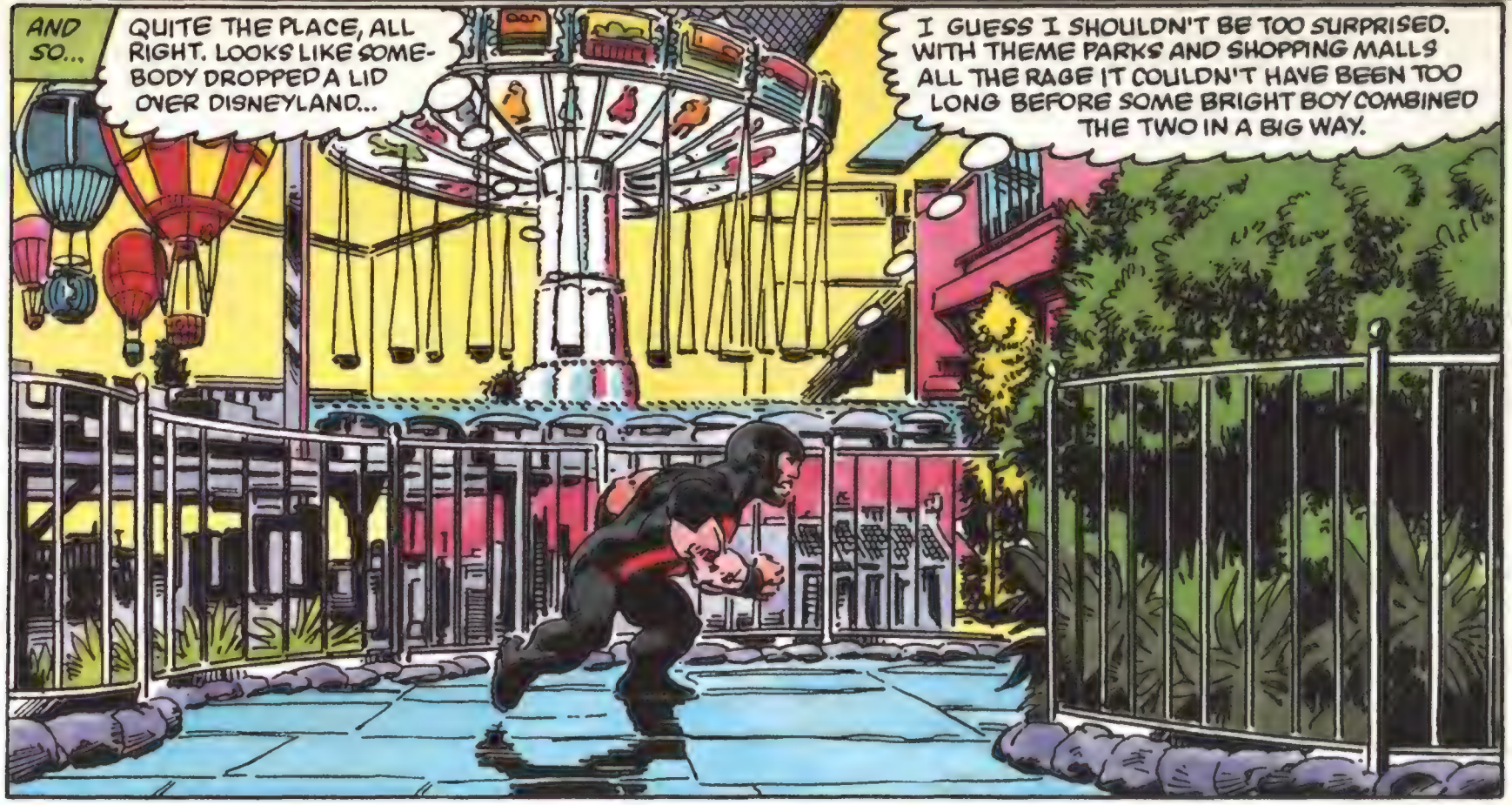
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By William Severini Kowinski

Endless summer at the world's biggest shopping wonderland

For 30 years, enclosed malls have been growing; now, in West Edmonton, Canada, the ultimate 'retail drama' is onstage

It is the largest shopping mall in the world, canonized as such by the 1986 *Guinness Book of World Records*. West Edmonton Mall also contains the world's largest indoor amusement park and the largest indoor waterpark. It has the planet's biggest parking lot. According to Nader Ghermezian, one of the four brothers who devised and built it, it is "the most complete tourist attraction in the Universe." And to celebrate all this, the mall launched a record number of balloons in 1985—half a million, carefully counted by a certified accountant as they floated up from its roof to blot out the sun in the sky over Edmonton, Alberta—the northernmost of Canada's major cities.

To begin to put its size in perspective, consider that the previous record holder as the largest mall was the Del Amo complex in Southern California. West Edmonton is twice its size. Fashioned from two existing malls, Del Amo has 360 stores. West Edmonton added 400 stores just in its recently completed Phase III, for a total exceeding 800. That's 11 major department stores, more than 110 eating places, 200 stores that sell women's clothing (35 for men) and 50 shoe stores. The mall also has several theme shopping areas, the Ice Palace skating rink, a Spanish galleon in its own lake, four submarines, and 37 animal displays and a petting zoo—birds, Siberian tiger cubs, miniature Arabian horses, reindeer, baby bears, baby moose and one baby elephant.

If you are a veteran of voyages down a particular rabbit hole or through a certain looking glass, you probably would find a visit to West Edmonton Mall a

Depicted in a recent Marvel Comics episode (above), West Edmonton Mall is no less fantastic in real life (opposite); here, subs prowl a 438-foot-long lagoon.

Photographs by Enrico Ferorelli/Dot

The size of 108 football fields, West Edmonton Mall is covered by a single—somewhat oddly shaped—roof.

Overlooking a miniature golf course, exclusive shops line West Edmonton's Parisian-style Park Lane.

familiar way to spend the day. Aerobic dancers leap near the sculpture of Alberta oilmen. Children climb into the mouth of an iron whale to sit under a panel of pink neon. You cruise in a submarine that runs on tracks beneath the mall's lagoon, past tanks of sharks, dolphins and moray eels; you emerge to see a girl in her first communion dress waiting to get on. You are almost knocked down by a running banjo player in a candy-striped jacket, late for his gig in the Bourbon Street section. Somebody seems to be following you, but it's only a mall maintenance man with a push broom, obsessively sweeping up dust even as it falls.

There is reflective glass everywhere. It's a mall of mirrors, and the images of the mall's random citizenship of the day—old and young, dressed in Armani jackets or Levi's jeans, business suits or swimsuits—are doubled and trebled; parades of them march into each other and disappear, only to emerge from some refracted eternity holding a plastic bag from Fragments of a Dream.

But West Edmonton may not remain the biggest mall in the world for long. The Ghermezians (and their Triple Five Corporation) have vowed to top themselves, perhaps in the first post-Edmonton project they've agreed to begin in the United States—a shopping mall and amusement complex just outside Minneapolis-St. Paul, which is planned to encompass office, hotel, entertainment and educational facilities.

Ironically, this project will rise just a few highway miles from the Southdale Shopping Center—the one that started it all, exactly 30 years ago. There are

several thousand multilevel enclosed malls in North America and others scattered on every continent on Earth, except (for the moment) Antarctica. But before Southdale, there were none.

Yet for all its size and strangeness, the West Edmonton Mall is less an exception than a summing up of what the shopping mall is all about, and what it has become since Southdale. In little more than a generation, the mall has become the signature structure of the age. A 1985 survey showed that 78 percent of Americans—some 185 million—went to a large enclosed mall at least once a month, and 93 percent had been to a mall within a six-month period. Two previous surveys found that American teenagers and Americans in general spent more time in the mall than anywhere else except home, school and workplace.

Teenagers are almost endemic to the mall—some of them are so fiercely loyal that they call themselves "Mall Rats." Such self-confessed examples include Michelle and her friends, teenagers of both sexes between the ages of 12 and 15, who hang out at Hillsdale Shopping Center near San Francisco. "A Mall Rat is someone who is here every day," Michelle says. The primary reason is social; it's where kids strut their stuff. "We put on our cool faces and walk around and try to meet girls, and scare all the other guys," says Dan, who frequents Detroit malls. The loyalty of Mall Rats is sometimes extreme. When his family moved, one boy in the Washington, D.C., area insisted on bicycling five miles every day to his old mall so he could be with his friends.

Teenagers also work in the mall, which adds to the attraction. "I visit my boyfriend," said one of the girls in a school uniform who was spending a few hours between the bus from school and the bus to home at Fox Hills Mall in Los Angeles (like malls in other cities, it is a public-transit transfer point). "He works in the pizza parlor." Teenagers who go to large high schools but live far apart—perhaps in different towns—find that the mall is their common turf. It is also the least competitive place to meet kids from other schools (although school rivalries are not always checked at the mall lockers).

The elderly are also conspicuous regulars at the mall. They sit and socialize and watch the surrounding action. In this age-segregated society, many might not see children and younger people at all except at a mall. Some find escape from loneliness and fear. "If I have a stroke at home, there's no one there to help me," says an elderly man in a Maryland mall. "Maybe if I'm in the mall someone will help me."

The author, who wrote The Malling of America *(Morrow, 1985), enjoyed a swim in the Waterpark while he was visiting West Edmonton Mall.*

At West Edmonton Mall's hotel, Catherine and Wendell Arehart perch on bed in truck-stop room.

Full-service mall: at West Edmonton, rental carts meet physical needs; fortune-teller meets psychic needs.

But seniors can also be found walking around. When doctors began prescribing walks for heart patients, the early-morning "mall walkers" became a part of the scene, implacably marking off their measured miles in the Sandburg Mall in Galesburg, Illinois, the Mall St. Vincent in Shreveport, Louisiana, and the Greengate Mall in Greensburg, Pennsylvania, among others. "We open our doors early for the walkers," says Stacey Rosa, marketing secretary at Greengate, "and some of our eating places open early for them, too. We have regulars who come year 'round, although there are more in the winter. Some have heart conditions, but some just come for the fun of it. Every few weeks we get a busload of seniors from one of the convalescent-care homes. They usually pull in at around 11 A.M., have lunch at Elby's at noon and shop until the bus leaves at 2."

Early-rising walkers chalk up miles at Greengate in Pennsylvania; they come before stores open.

Seniors also prize the convenience and centrality of the mall, perhaps even more than younger shoppers. "It is a blessing for us senior citizens," says Cora, a 93-year-old, about a Seattle mall. "We can go to the bank and the post office. We can do all our shopping here."

Young mothers like the mall, too. They come with friends after dropping their children off at school or day-care. "They jog, have their coffee—and they're ready to shop," says Greengate's Rosa.

As more women have joined the work force, malls have reoriented themselves to provide faster service—and faster food—for lunch-hour shoppers in a hurry. But malls also offer unexpected benefits for other emerging groups, such as divorced fathers. For David, who has to travel 30 miles to see his daughter on weekends, the mall is a priceless resource. "If we have only Saturday afternoon, we usually go to the mall," David says. "We can do a lot—see a movie, have lunch and talk, buy her stuff she needs and stuff she doesn't need, and just walk around with ice cream cones."

Mall encounters have resulted in marriages (occasionally held in the mall itself). Families go together and combine shopping and socializing. "The nearest thing I've seen in the suburbs to the communal rituals of more traditional communities," author and psychiatrist Robert Coles told *Psychology Today*, "is the Saturday trip to the shopping center. . . ."

An entire generation has now grown up with the shopping mall, from the New York woman in her mid-30s who remembers her family driving to the mall as a Sunday treat, to the Pittsburgh baby who (her father insists) cries "Mall! Mall!" whenever she is slipped into her coat. The mall has become the new Main Street of old small towns, the new center of the central city, and the only commercial and community "downtown" many suburbs and fast-growing cities have ever had.

Crime and community service

All this activity has become a magnet for more than shopping and socializing. After a period of seeming immunity, malls now have the same kind of crime as cities and towns, with purse snatching, shoplifting, vandalism and car theft heading a list that also includes drug pushing, kidnapping, rape, murder and at least one random killing spree (in Springfield, Pennsylvania, in 1985). Accidents also happen, such as the errant roller coaster at West Edmonton Mall that killed three people, causing the amusement-park portion to be temporarily closed last June.

Malls hold community events, from blood drives to meet-the-candidates nights, art fairs and symphony-or-

chestra performances. Publicity-seeking authors, rock groups and television soap-opera stars work the mall. Its center court has become America's center ring, where TV game shows hold preliminary rounds, cheerleaders compete and beauty queens are crowned.

Most movie theaters are in or near malls now, where the movies' prime audience (the 12-24 age group) is also found in large numbers, perilously close to all the licensed merchandise—the T-shirts, records, novelizations and action dolls—that usually spin off from films made for that audience. "The malls are where the kids are," said a motion-picture studio executive several years ago. "Malls are becoming the center of our lives, for richer or for poorer."

Everything in the mall is directed toward its main purpose, however: to capture customers for its stores. According to various estimates, malls are responsible for 50 to 60 percent of the nation's retail sales; most department stores are in them, and many chains have virtually all their outlets in malls. Malls are indeed our cathedrals of consumption.

Retail stores form the core around which a lot more has clustered. As part of the shopping center itself, there may be law offices, college campuses, hospitals, chapels, health clubs and funeral homes. Municipalities use them for police stations and judges' chambers. Some malls have their own hotels and condominiums, so it is not only possible to be born, educated, employed, doctored, arrested, tried, jailed, ministered, married, entertained and embalmed in a shopping center—you can live in one.

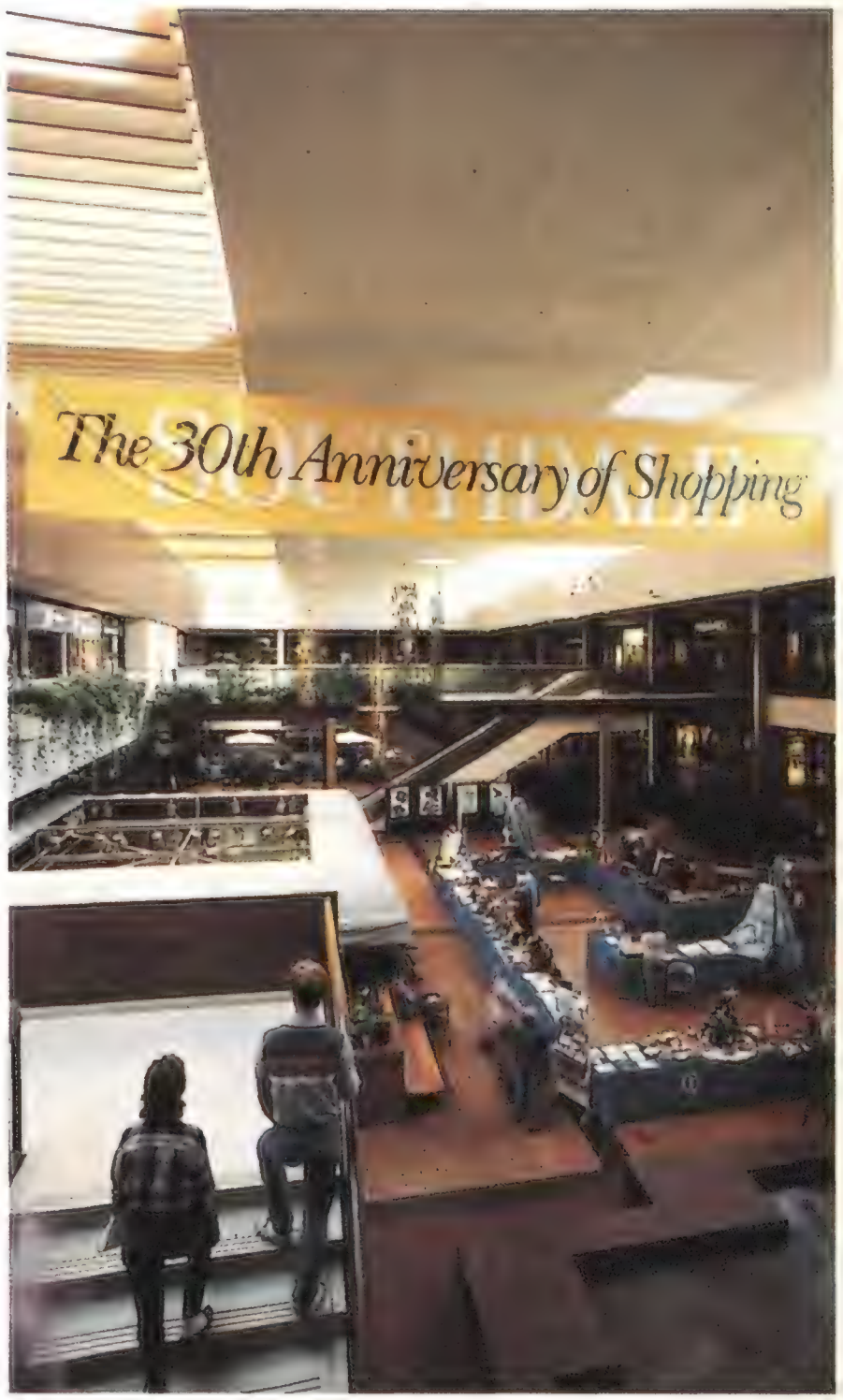
The mall in movies—metaphor for blandness

The mall has become part of our myth making. Both Arnold Schwarzenegger and Chuck Norris defended the mall against invaders in recent movies. Michael J. Fox drove *Back to the Future* to a mall parking lot, and the future itself is represented by actual mall locations in *Logan's Run* and the forthcoming *Running Man* with Christopher Reeve (which is scheduled to be filmed at West Edmonton Mall).

The mall has also come to symbolize certain unflattering tendencies as well, such as a zombie-like devotion to consumption in the cult movie *Dawn of the Dead.* It is also often used as a metaphor for blandness, for consumer-product overkill and for the illusion of variety without the reality of it.

Initially, it was the invention of the automobile that spurred the mall idea. Early experiments with planned shopping districts that separated cars from pedestrian shopping environments included Roland Park in Baltimore (1907), Market Square in Lake Forest, Illinois (1916), Country Club Plaza in Kansas City (1922) and Highland Park Shopping Village in Dallas (1931). Then, after World War II, the elements emerged that would practically demand the invention of the modern mall: an unparalleled economic prosperity affecting more people than at any time or place in history. This spawned a massive move to the suburbs, especially to instant housing tracts invented by the private sector, with the way literally paved by new federal highways. Other government programs made single-family housing affordable for a growing middle class—which needed to fill those houses with goods.

Then came television, the greatest advertising medium in history. The national television networks fed the same consumer images into every home no matter where it was; the national highway networks made those advertised products and services accessible. All



Celebrating its 30th anniversary this year, Southdale mall, outside Minneapolis, was first to be enclosed.

Tree-shaded bench in Woodbridge Center, New Jersey, provides a breather from the shopping bustle.

that was needed was a delivery system: the shopping center. What television proposes, the mall disposes.

The particular form of the mall seems consistent with another postwar factor: the threat of nuclear annihilation. The nation needed to escape from the fear of it, and where better to hide than in an enclosed fantasy world of perfect products and cheerful forgetfulness. The mall became America's psychological bomb shelter.

The modern shopping center began with strips of nondescript stores abutting suburban supermarkets, their main feature being an oceanic parking lot for station wagons with tail fins. Soon downtown department stores sent out timid tendrils into the suburban soil—not even branch stores but "twigs" (as they were called). The strip centers got longer and the department stores more interested—it seemed suburbanites would shop for more than bread and lawn food in their own growing communities.

Outside Seattle in 1950, Northgate mall was built with two parallel rows of shops joined by a special pedestrian area in the middle, which was anchored at one end by a major department store. From then on, the big department stores would determine the mall's development.

Technically speaking, that area in the middle of Northgate was the "mall," which means an open pedestrian-only space, like the Mall in Washington, D.C. Etymologically, the word "mall" comes from a game called pall-mall, in which mallets were used to strike wooden balls. Popular in England into the 17th century, it was a combination of golf and croquet played on green fairways, which themselves came to be called malls. It is related to the word "maul," both the noun (for hammers used by carpenters and iron workers) and the verb (as in "mauling the fairway").

Other "open" malls like Northgate were built before architect Victor Gruen was given the task of designing a mall for a Minnesota location that was prone to extremes of heat and cold. Gruen enclosed the entire area and provided a mallwide heating and cooling system that came to be called comfort control. The mall was Southdale: it opened in 1956, and America would never be the same.

"We discovered that the enclosed mall changed the concept," said Paul E. Leyton, a vice president of the May Stores in the early years of shopping-center development. "The idea of having the enclosed mall doesn't relate to weather alone. People go to spend time there—they're equally interested in eating and browsing as well as just shopping and leaving. So now we build only enclosed malls."

What seemed to be an environmental expedient turned out to be the key to creating a new kind of in-

Many older folks like to relax at malls because they are warm, safe, and a convenient place to meet friends.

Teens everywhere love the local mall, where they shop, go to movies and check out kids from other schools.

ternal world—a theater that walled out all distractions and focused all attention on what the industry calls the "retail drama." Management could now control all elements within that environment—every tree, every event—and eliminate such threats to concentration as cars and weather.

Because it is cut off from the Earth's daily and seasonal rhythms, and because management demands that everything always look new, the enclosed mall is timeless; because it is isolated from its surroundings and because it is repeated in essentially the same form everywhere, the mall is placeless. It is a malleable space in never-never land, linking the idea of shopping with the idea of entertainment.

In some senses the mall is heir to such ancient markets as the Greek agora, the 15th-century Great Bazaar of Istanbul, the medieval markets held in Western European cathedrals and squares, and the public markets of Colonial America. Architecturally, the mall typically wraps the blank walls of a modernist fortress around an internal world that borrows liberally from urban arcades (from Milan's Galleria to the Providence, Rhode Island, and Cleveland, Ohio, arcades), major train stations, grand department stores (Galeries Lafayette in Paris, Chicago's Marshall Field's), carnival midways and hotel lobbies (especially the Morris Lapidus movie-set lobbies for the Fontainebleau and other Miami Beach resort hotels).

But the basic mall theme is a scaled-down, sanitized version of Main Street, not unlike the "Main Street USA" of Disneyland (which opened a year before Southdale). However, this nostalgic small-town imagery is surrounded, preserved and in fact created by high technology: it is Main Street in a spaceship.

It is the factor of enclosure that allows the mall to create an internal world of "everything under one roof"—including amusement parks. The mechanisms involved in believing in the reality of scaled-down replicas—or at least being amused by them—are more subtle. Perceptions geared to the staged imagery of television are certainly involved, and when *Toronto Globe and Mail* reporter Ian Brown writes that "West Edmonton Mall is like turning on all the channels on television at the same time," he's right on the money. Replication within enclosure creates the illusion of completeness, so that West Edmonton not only offers its versions of the world's major tourist attractions, it

Four times a day, dolphins Maria, Mavis, Howard and Gary put on leaping routine at West Edmonton Mall.

carries out this illusion in its shops, with every faraway place represented—from Orientique to New York New York, Hollywood West, Texas Star and Miami Man. Other malls also do this on a smaller scale.

It is this property of the mall as a large enclosed and controlled environment, filled with amenities but directed toward a single purpose, that links it thematically with other dominating environments of our time—condominium buildings and villages, planned communities, convention centers, domed stadiums, airports, office and high-tech manufacturing campuses, megastructure hotels and all their combinations. They are often physically as well as stylistically linked, creating a kind of mall-condo continuum across the urban and suburban landscape of America.

The mall's enclosure and the barrage of consumer images can also create some unpleasant new feelings in people—a particular combination of claustrophobia and overstimulation that can perhaps be described as "mallaise," or *mal de mall.* In a larger sense, the combination of enclosure and inclusiveness creates an eerie sense of detachment from the world outside, which is noticeable in malls and these similar structures. You can feel it, for example, in West Edmonton's World Waterpark: after catching some machine-made waves on the oceanic beach and splashing your bones down one of the 22 waterslides, you relax in the whirlpool bath, next to the tanning deck with its own artificial dawning and dusking sun, not far from the volleyball court. You look up from the steamy rippling water and try to remember what city is outside, and whether you are still on the Earth or perhaps in orbit around it.

"Festival marketplace"—downtown answer to mall

In the 1970s, downtown began fighting mall with mall: they built posher suburban replicas upended in elegant megastructures, or the new style that came to be called the "festival marketplace"—reconstituted historical buildings and new structures on historic locations with specialty shops and eating places. Pioneered by the Faneuil Hall Marketplace in Boston, this form is now part of many downtown and waterfront revivals.

One of the more architecturally impressive festival marketplaces is Riverplace in Minneapolis. This city survived suburbanization with its major department store still active and prospering, as well as with a series of thoughtful downtown improvements. "Once major retail leaves a downtown, it's almost impossible to get it back," observes Michael Kelly, president of the Center Companies, which manages Southdale and other malls, but has its own corporate offices in downtown Minneapolis.

Minneapolis is also one of the cities that consciously integrates its cultural and educational resources with its retail revival—resources that few suburbs can match. Other cities are also exploring traditionally urban forms like the arcade and the public market, which offer more public control than do the more privatized spaces of the malls. Still, even with new specialty shopping and old department stores, downtown Minneapolis is second in sales to a single suburban shopping district—with Southgate mall at its heart.

It's not hard to imagine what a wonder Southdale was to its first customers, but today it is a more ordinary place—which in a sense is what it was always supposed to be. Southdale was designed to be a community center, surrounded by various forms of housing, a hospital, library and TV station. Today that hospital (Fairview Southdale) cosponsors the mall's walking program, which includes health seminars, a mapped route (start at Penney's, go right at Helzberg Diamonds, past Chez Chocolat, Zoomp and Things Remembered . . .) and certificates of achievement for new

members of the 100-Mile Club. And this spring, Southdale hosted the Children's Miracle Network Telethon, which was broadcast live by a local television station.

"Victor Gruen's idea was to create a town center," Michael Kelly says. "It was to have a variety of activities that would enhance its viability as a retail place, but was also to become an integral part of the community itself rather than just a commercial facility." Gruen was in fact a kind of visionary. Born in Austria, he fled the Nazis in 1938 and arrived in America with $8 and his T-square. He eventually had his own firm (Gruen Associates, which still designs malls as well as other developments internationally). He was an idealist and optimist; his younger colleagues called him "Uncle Bubbly." But he became disenchanted with the mall industry and its reduction of the Southdale dream. He retired to Vienna, where he died in 1980.

Southdale itself faces a new challenge—the Triple Five megamall that the Minnesota Retail Merchants Association's study shows will take 25 to 30 percent of its business from existing retail centers, with Southdale (being the closest) likely to be the hardest hit of them all. Southdale is counting on its convenience, and maybe some local loyalty, to weather the storm.

But today Southdale seems to be the kind of place that Minnesota's Garrison Keillor might tell stories about, if he ever left Lake Wobegon. For it's a quiet afternoon at Southdale mall. That's Ed over there, sitting on a bench in the Garden Court, hoping Alma, his wife, sitting next to him, isn't thinking of something else to buy. Ed is retired now and his eyes are getting bad—not as bad as Bob's, who is over by the European Flower Market, trying to read the newspaper with a magnifying glass. And not so bad that he doesn't see the Anders girls, prancing toward Casual Corner in their miniskirts. They're wound up about their prom, which will be held here in the mall. Both go to Kennedy High now and they're hoping to run into those boys from Richmond High whom they met last week when they were buying a fruitcake for their Aunt Maria at Morrow's Nut House. They only have a few minutes because they have to go back for Alyce, their nine-year-old sister. Alyce is downstairs, standing in her precious white dress with the full skirt and her shiny black shoes, looking at Masters of the Universe laundry bags in Disco Baby.

In West Edmonton's Waterpark, swimmers can ride machine-generated waves, brave variety of waterslides or merely tan themselves on a beach under artificial suns. Not bad in winter, when it's ten below outside.

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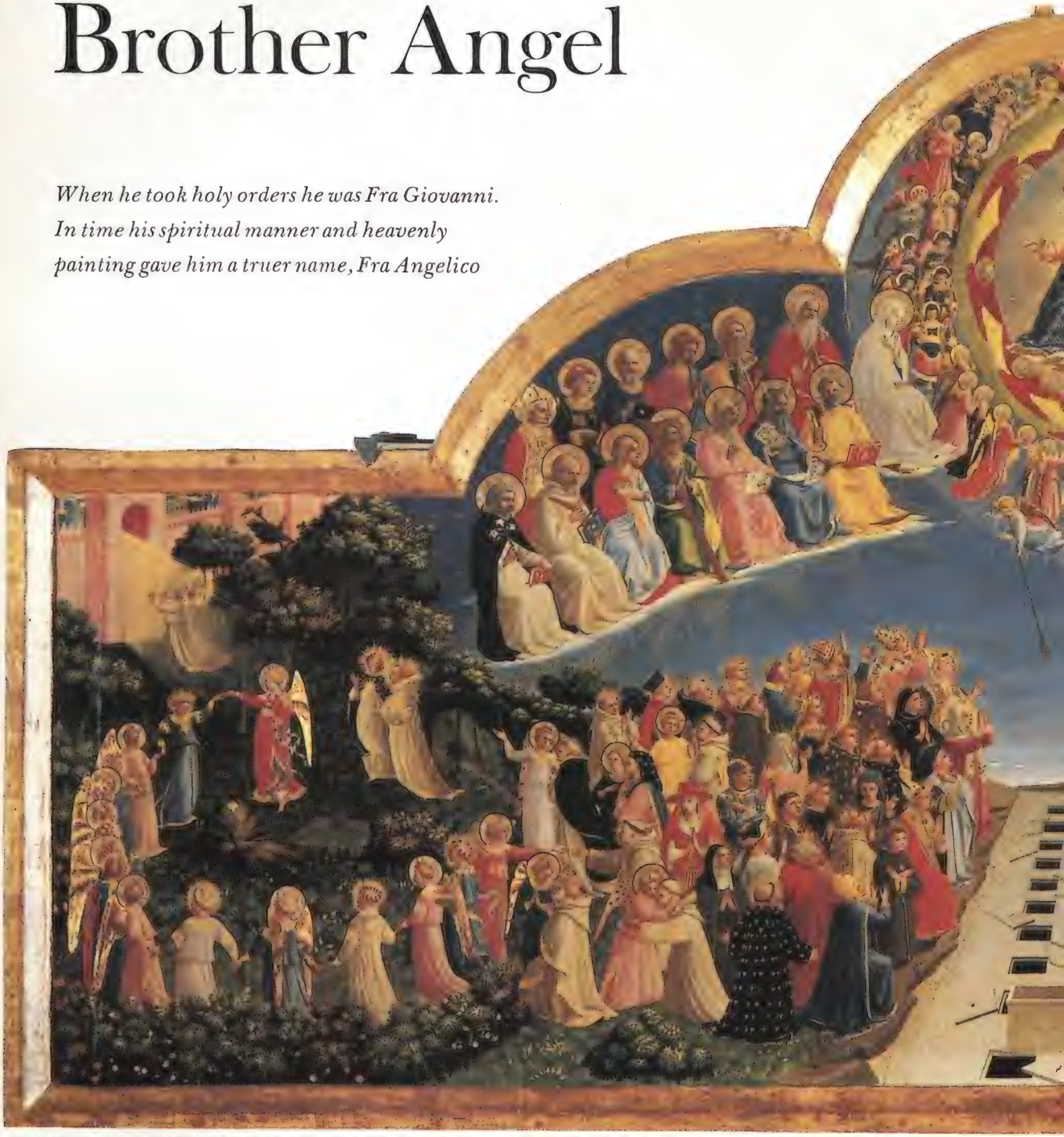
–NOT AVAILABLE IN WHOLE BEAN–

By Robert Wernick

Brother Angel

When he took holy orders he was Fra Giovanni.
In time his spiritual manner and heavenly
painting gave him a truer name, Fra Angelico



Commissioned in 1431, *The Last Judgment*, now in the Museum of San Marco, Florence, was painted for the church of Santa Maria degli Angeli. It was completed when Fra Angelico was in his early 30s.

He grew up in a time in many ways like our own, a time of material progress and economic development, of small wars, intellectual and artistic ferment, and a growing sentiment among educated people that the world was going breakneck to hell. The Latin church itself was torn in two. One Pope was in France and another in Italy. The two pontiffs held court, appointed cardinals and excommunicated anyone who followed the other. It took a strong faith to survive, and his faith was rewarded: when he was about 17, the Latin church was reunited, the rival Popes were swept away and new hopes for reform spread over Europe.

He was born around the year 1400 and named Guido, son of Piero, who was probably a farmer near the village of Vicchio in Tuscany, about ten miles from

A moving tour de force of piety and conception, the harmoniously composed work, with a row of open graves down the middle, presided over by Christ, has angels and the blessed at left, the damned on the right.

Photographs by Pierre Boulat and David Lees

ECCE VIRGO CONCIPIET 7 PARIET FILIVM 7 VOCABIT NOMEN EIVS EMANVL. YSA.VI.C
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The Annunciation, a late work, about 1451, was first of a series commissioned by Piero de' Medici to decorate a church silver chest.

Florence. When he took holy orders in his early 20s in a Dominican convent in Fiesole, he chose the name of Fra Giovanni, Brother John, of Fiesole. It was only after his death in 1455 that he became generally known, "because of his utmost modesty and his religious life," as Fra Angelico ("the angelic brother").

Nothing at all is known of his early life. He must have started as a boy learning the arts of manuscript illumination and of painting in tempera on wood. He would naturally have gravitated toward the effervescent artistic community of Florence, where there were 41 painters officially registered, each with his workshop and his staff of assistants, 138 sculptors and stonecutters, 44 goldsmiths—as against 70 butchers. Florence was a great city for its day, but it was small enough, 50 to 70 thousand souls, so that every one of any consequence could share in the excitement of the intellectual and esthetic upheaval beginning there.

His name first appears in the records when he was paid 12 florins for an altarpiece for the church of San Stefano al Ponte when he was about 18. Vasari in his *Lives of the Painters*, written about 125 years later, says that his talents were recognized as exceptional at a very early age and that he could have made a fortune from his paintings as a layman. He preferred to become a friar, of the order of Preaching Friars, or Dominicans, whose 600 houses were spread throughout Europe. He might have been expected to enter the large and prestigious monastery of Santa Maria Novella in Florence. Instead he went to San Domenico in Fiesole to join the Observantines there, the strictest and most ascetic friars of all, observing to the letter the original Rule of the Order and striving to re-create the all-consuming religious fervor of the primitive Church. All his life, brother John was to be a faithful member of this house, in Fiesole and later in Florence when it took over the convent of San Marco.

Although one of the great painters of all time, he was first and above all a Dominican friar. His calling was his life, and his life, totally devoid of external dramatic incidents, was spent in being a good Dominican, bound by his vows of poverty, chastity and obedience.

Robert Wernick writes frequently for SMITHSONIAN *about art, history and other subjects. His article on the ancient sagas of Iceland appeared in January.*

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Massacre of Innocents was another silver-chest panel and is a rare example of Angelico painting that portrays violence and agony.

He never allowed his painting to interfere with the regular schedule of his ecclesiastical duties. He prayed and read sacred texts and meditated night and day, he succored the poor and the ailing, and he was quite capable, when called upon, of handling practical affairs as well. He held various posts in his community—vicar, procurator, administrator of financial affairs of the convent and, for a couple of years prior, the man running the whole community.

Biographers have found it hard to construct a life out of the surviving documents: receipts for paintings, legal papers regarding convent property. So quiet and even was his existence that Vasari, a great collector of gossip who interviewed later generations involved in the convent, could find hardly any anecdotes to record about him. According to one, tears would flow from his eyes whenever he painted a Crucifixion; skeptical modern critics say this is unlikely because he needed clear eyes to paint the way he did. Another relates that when invited to dine at the pope's table, he refused to eat meat because he had not asked for the necessary dispensation from his prior. A third, which has been called a fable, too, but which is corroborated by other sources, is that when Pope Eugenius IV had occasion to appoint a new Archbishop of Florence, he was dissatisfied with all the distinguished names submitted to him. He turned instead to the quiet friar whom he had summoned to Rome to decorate a chapel in the Vatican and offered the post to him. Angelico respectfully pointed out that there was a much better qualified man in his monastery, Antonino Pierozzi. The Pope took his advice, and it was sound advice, for Antonino was to become a great defender of Florentine liberty and a saint of the Catholic Church.

Eugenius, who had learned to admire Angelico and his work during the ten years he spent in exile in Florence, when he was driven out of Rome by riots and conspiracies, was one of the first of the Renaissance popes who were to play such a great role in making Italy the world center of the arts. The early part of the 15th century was the springtime of the Renaissance, when the air was charged with the excitement of novelty and experimentation. Fra Angelico may have spent most of his time shut up in a cloister, but he shared in all that enthusiasm. Some art historians like Berenson have described him as a painter who

Touchingly reverential, *The Deposition*, ca. 1443, has been called the earliest fully Renaissance work of Angelico's because of naturalistic rendering of figures and landscape. Details are shown on opposite page.

stuck to a medieval vision while revolutionaries like Masaccio and Brunelleschi were pioneering new ways of looking at the world. A visit to the newly cleaned frescoes at the convent of San Marco can demonstrate at a glance how much of a pioneer he was, too.

He has been luckier than most of his contemporaries, or most Old Masters for that matter, in that the bulk of his work is concentrated in this one place. Some of it has suffered the common fate and been cannibalized; paintings that were meant to stand together to form a harmonious whole are scattered in museums from Leningrad to Detroit. But most of his masterpieces, the ones that have made him among the most familiar and most popular of all artists, are here in the 15th-century setting for which they were intended.

They are surprisingly well preserved. Angelico was a thoroughly professional painter who insisted on the best materials. He used the hardest woods for his panels, the most permanent pigments. He had a well-trained group of assistants, and they could cover big stretches of plaster in an unusually short time. Vasari says that once he started painting, he never changed a line or a color.

Six years of patient cleaning, begun in 1977, have removed the dirt of the centuries and the unfortunate coats of muddy red and gray put on by well-intentioned restorers in the 19th century. Except for the loss of some blue, the frescoes on the convent walls

have reappeared, as fresh and radiant as the day they were put down. The color harmonies are both delicate and bold. The design is sure and smooth and sometimes startling. This is also true of the panel painting, *The Last Judgment* (pp. 46-47), where open graves are a jumble of geometric forms, serving dramatically to mark the absolute separation between the world of good and the world of evil. Above all, there is that air of suave serenity that is Angelico's hallmark, the deep emotion that he can pack so tightly into a gesture.

In the San Marco convent, which is now an Angelico museum, you can follow him as he kept up with the times. Like the other artists of his day, he had moved away from the rigidities of traditional painting. The bright young men of Florence had grown tired of the stiff, hieratical figures inherited from Byzantium and wanted to replace them with graceful, moving ones drawn directly from life. They studied the human body, they studied the configurations of objects in space. With the new science of perspective introduced by Brunelleschi they could paint scenes so skillfully that—for the first time in the history of art—a surveyor seeing the painting could draw a plan showing the precise position of every figure or building or tree.

The human side of saints

This was more than a matter of showing off technical skill. The theologians of that day taught—as they had before and have since—that in Paradise the blessed are granted a sharper and more complete vision than they possessed as mere men and women. For an artist of Fra Angelico's temperament, creating a clear rational representation of space was like a foretaste of heaven, and he plunged into it with joy.

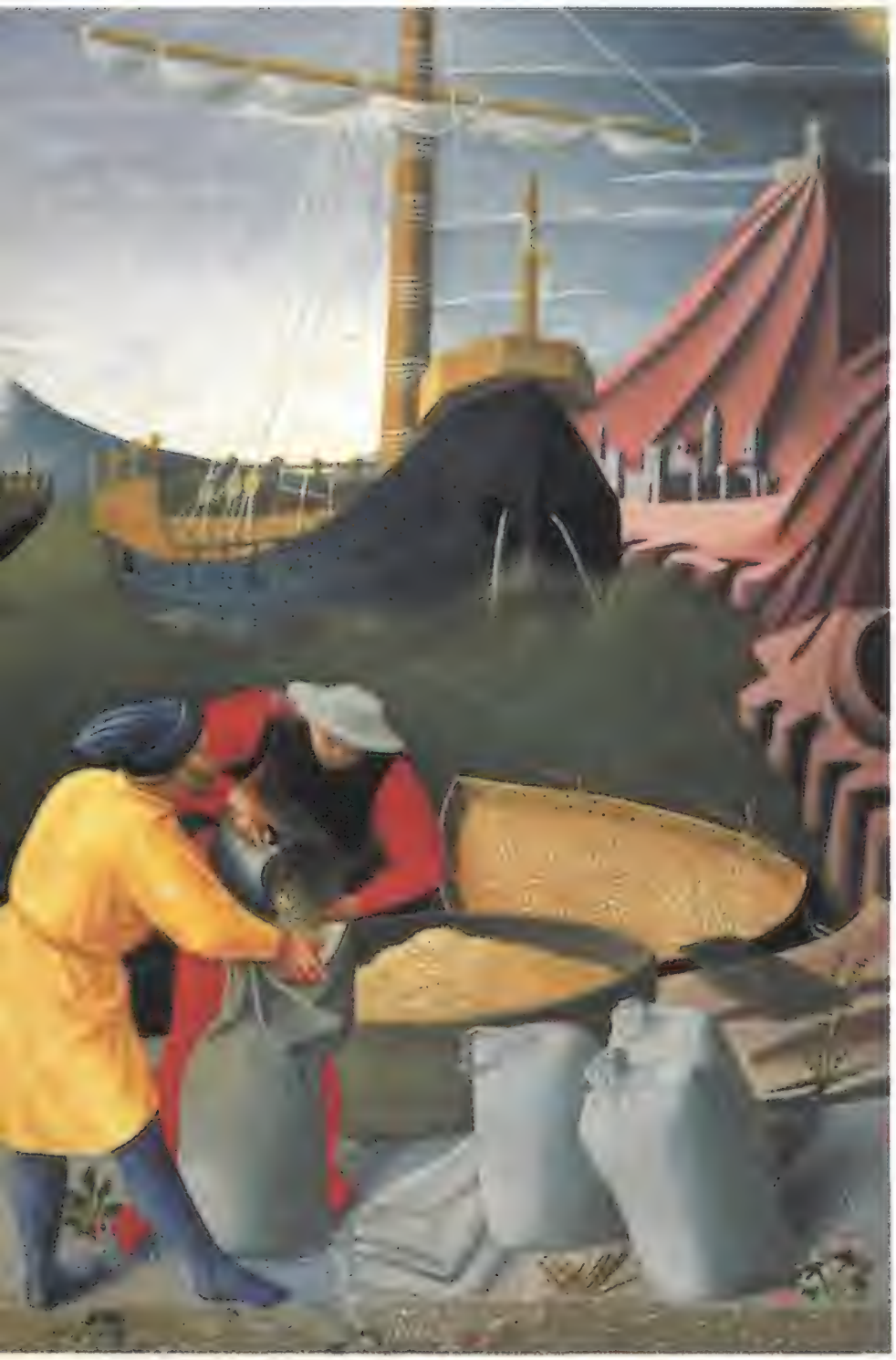
His style, his vision, hardly changed over the years. But he was constantly sharpening his technique in the direction of more naturalistic effects. There was a form that we now call the Sacred Conversation (*sacra conversazione*) in which on each side of a scene from sacred history, there are a number of saints presumed to be commenting on the scene. In the old paintings these are stiff, staring figures, perhaps with a pointed arch over their heads to frame them. As Angelico and his contemporaries painted more and more of these Conversations, the arches become doorways to rooms, the rooms fill out with walls and windows, landscape flowers through the windows, the saints become animated, their feet are firmly fixed on the floor, they make natural gestures.

A figure like the executioner swinging his sword to cut off a saint's head in *The Martyrdom of Saints Cosmas and Damian* shows how conscientiously Angelico had studied the muscles of the human body in motion. A scene like the *Massacre of the Innocents* (p. 49) shows

Real people are portrayed. Here, beside Christ, is the architect Michelozzo, a friend of Angelico's.

An accomplished painter of landscapes, Angelico treated Jerusalem as a fortified Italian city.

Saint Mary Magdalene kisses the feet of Christ. In painting, the Virgin Mary is directly to her left.



Now in the Vatican, detail from St. Nicholas predella in Perugia concerns the miraculous shipment of grain.

how skillful he became in handling a crowd of people packed into a restricted space.

The new techniques implied a new vision of reality. The Virgin in medieval art is always a majestic figure, the Queen of Heaven; Angelico's Virgins are more like girls he might have seen in Florence.

The church was not always happy with the increasingly natural look of figures in works of art. There were those who pointed out that if you painted the Holy Family as peasants, you might end up displaying mere peasants without a trace of holiness.

A certain grandeur for the Gospels

The problem did not exist for Angelico. No one would ever mistake his Annunciations and Visitations and other biblical scenes for slices of everyday life. It is clear that something of transcendent importance is taking place in these humble settings. They have the same kind of grandeur as the Gospel stories which he loved to illustrate, and that is what has ensured his immense popularity over the centuries. In the Gospels, the ordinary and the extraordinary are mixed without self-consciousness, simple country people go about their lives getting married and dying, fishing and growing grain, paying taxes and speaking in peasant accents, yet there is never any doubt in the minds of the authors that they are living through important events. Angelico's outlook was precisely the same.

For while his techniques were up-to-date, and his eye was ever ready to see new things, the mind behind the eye remained thoroughly orthodox. Later painters of the 15th century whom he could have known might fill their works with gods, nymphs and satyrs. They might adopt openly pagan ways, worship sensual pleasure, glorify the nude body. They might, like Fra Filippo Lippi, also a friar, though one of a different stamp, use their mistresses as models for their Madonnas.

This side of the Renaissance was wholly foreign to Angelico. He was one of the highest paid painters of his day—when he was about 34 the guild of flaxworkers signed a contract with him for the considerable sum of 190 gold florins "or as much less as his conscience may deem right to charge"—but all the money he earned went to the convent of San Dominico. He never painted anything but sacred subjects: Holy Families, episodes from the Bible, the lives of the saints. And his choice was strictly according to the rules, drawn only from sources approved by the Church. Angelico was a model Dominican. His art was never for art's sake; it was gentle propaganda. He was, as a Spanish priest has put it, a propagandist of Paradise.

Ineffable bliss, the peace of God, was Angelico's natural element. The hell which occupies the right side of his *Last Judgment* is a dull and dingy place

The first surviving work of Angelico's, *Virgin and Child Enthroned with Eight Angels*, ca. 1425-26, was painted for the high altar of the painter's convent in Fiesole. Central figures appear as detail on cover.

where seedy sinners sit lugubriously in big pots waiting to be boiled. In heaven on the left, on the other hand, whether the angels are singing or blowing trumpets and the blessed are dancing or basking in the divine effulgence, everyone is having a good time. "This man," said Michelangelo after seeing an Angelico painting, "must have found his model in paradise."

Every detail in an Angelico painting, however simple and straightforward it may look to the uninitiated eye, carries a heavy weight of theological symbolism. If there is a rose in the Virgin's garden, it is because she is called the Rose of Sharon. If there is a candlestick from the Jewish temple beside a figure representing the Church, it is because its seven branches were meant to prefigure the seven Christian sacraments.

A Fra Angelico painting can be taken as a visible sermon, sometimes with the appropriate biblical texts written right into it. The first of the 35 panels on the silver chest from the church of the Santissima Annunziata in Florence is a whole theological treatise packed into a space 39 centimeters square. It is a commentary on the vision of a wheel within a wheel in the book of the prophet Ezekiel, and it is devoted to an intertwining of the Old and New Testaments, with Ezekiel sitting on one side of the river Chebar and Pope Gregory the Great, who wrote commentaries on him, on the other, with Hebrew prophets and Christian evangelists in circular patterns amid a flow of texts from Genesis and the Gospel of St. John.

These sermons were framed carefully for the audience that was to receive them. All but two of the 45 cells of the monastery of San Marco contain a fresco (the experts debate on how many of these come entirely from his own hand—their estimates range from six to 41—but there is no doubt that he was responsible for the general design of all of them) and each fresco comprises a single striking image, the sole decoration of a room where a solitary friar would spend most of his

This double cell in San Marco is probably the work of Angelico's assistant, Benozzo Gozzoli.

hours day and night working, meditating and praying. They were painted on the darkest wall of the cell, beside the window, where they could be viewed by friars walking down the corridors. As aids to meditation, they might remind the friar that just as he could look through the window and see an external light streaming down from the sun, he could look through the painting to another, inner light illuminating his soul.

The paintings are quintessential Angelico, austerely graceful, a single concentrated image of one of the central scenes of sacred history in glowing colors and economical form. There are few figures, the backgrounds are stripped to their bare essentials, there is a quiet intensity that even today can sometimes make the herds of tourists catch their breath when they push into these narrow cells and catch sight of the image glowing on the bare white wall.

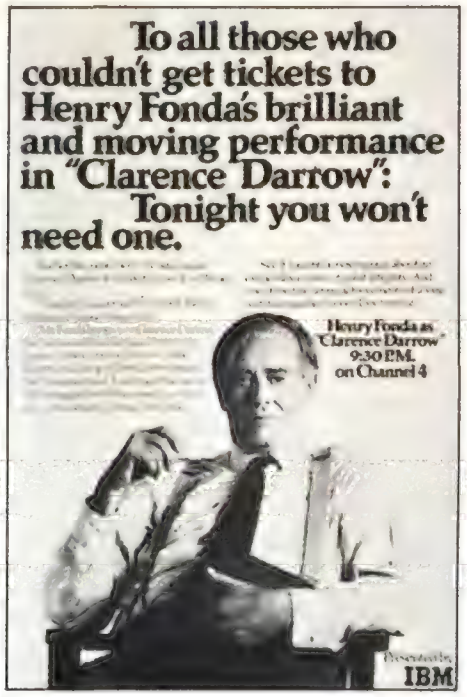
When he did a painting that was to be seen in church, Angelico used a less austere treatment. In the altarpiece he did for the church of San Marco commissioned by Cosimo de' Medici, the Virgin sits enthroned with her child in her arms, surrounded by angels and saints in various poses of adoration. This is the most famous of all Sacred Conversations and has a depth and naturalness in the placement of the figures that made it seem revolutionary in its time and the model for all future variations on the same theme.

Beneath this altarpiece are a series of small panel paintings, called predellas: only two of them remain in San Marco; most are in Munich and one is in Washington. They are bright and lively, full of dramatic incident; as in the scene where the two holy physicians appear by the hospital bedside of the sleeping deacon Justinian and, in a curious anticipation of 20th-century surgical techniques, replace the leg he has lost with that of an Ethiopian who has just died in the next room.

An eye for detail as well as the monumental

When he was painting predellas, Angelico would let himself go in the direction of arresting detail, as in the flax-workers tabernacle where a Roman soldier raises his shield to protect himself from the hailstorm that accompanied the martyrdom of St. Mark. When he was painting frescoes of the lives of Saints Stephen and Lawrence for the chapel of Pope Nicholas V in the Vatican, he adopted a more formal style, placing his solemn figures against a background of the Roman monuments. When he was painting the giant Christ in majesty for the Orvieto cathedral, he aimed at a noble monumentality. Whatever the task, he came to it with the words of his fellow Dominican Thomas Aquinas firm in his mind, giving the criteria for beauty in art: *integritas, consonantia, claritas,* which James Joyce translated as wholeness, harmony, radiance.

It has been said of the painters of the early Renaissance that they looked on the world as if it were the first day of Creation. For Angelico, this was almost literally true. He had no sense of history as moderns understand it, a horizontal process of one thing following another, effect proceeding from cause, over endless centuries. For Angelico as for the medieval mystics who inspired him, it was rather a vertical pattern in which events are significant only in the way they relate to the unique central event, which is the redemption of Man through Christ. From this point of view, everything takes place in a timeless present; the world is being created, Christ is being crucified, Man is being offered the choice of salvation or damnation, all the time. What look like anachronisms to modern eyes were perfectly natural to Angelico. On one of the panels of the silver chest, he had the angel Gabriel appear to Mary in a room like one designed by his friend, the architect Michelozzo, and he put Michelozzo himself on a ladder helping to lower Christ from the cross on Calvary in a painting in the San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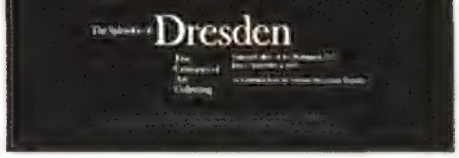
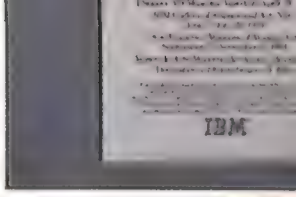
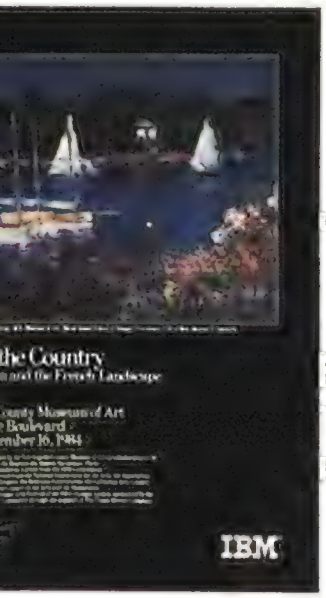
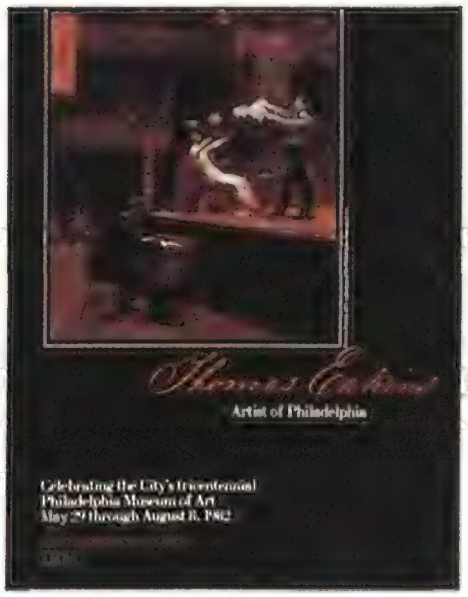
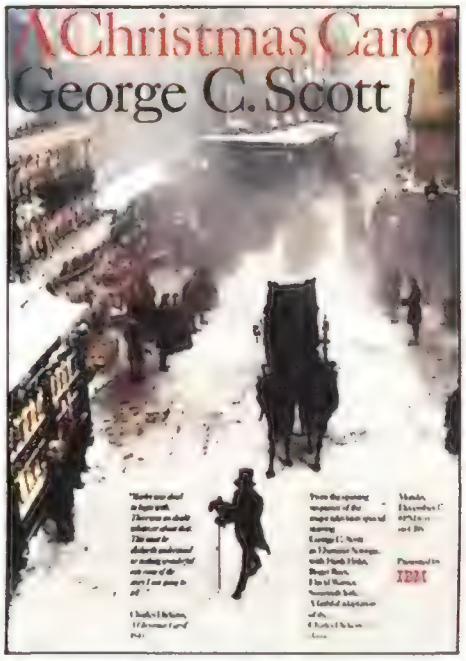


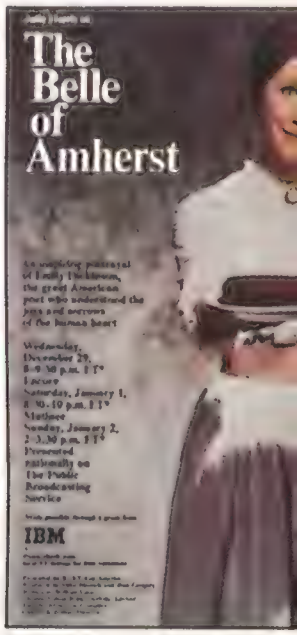




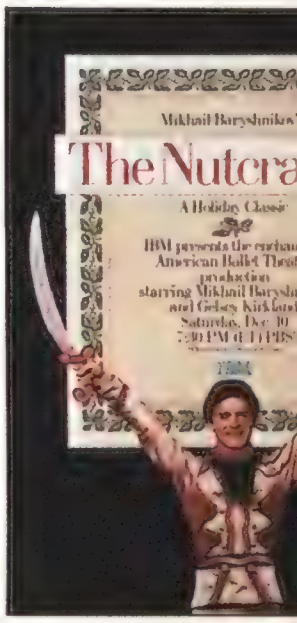


He discovered greed, love, power, tragedy, death, treason, and mutiny.
Then he discovered America.
IBM PRESENTS
CHRISTOPHER COLUMBUS
SUNDAY AND MONDAY, MAY 17TH AND 24TH, 8PM ET/PT CBS
IBM





Last year, the story of their early years won 11 Emmys.
Now, see them in their White House years.
'Eleanor and Franklin: The White House Years'
Sunday, March 13, 8 P.M. (EST) on ABC-TV.
IBM
Please check your local ABC listings for time variations.



We're also interested in computers.

These are some of the many art exhibitions, musical events, and television specials that IBM has supported over the years. Which goes to show that a company known for state-of-the-art technology can also be interested in the state of the arts.

On Wednesday, December 10, IBM presents "The Nutcracker" starring Mikhail Baryshnikov on PBS at 8PM (ET). Check your local listing.

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On Tuesday, December 23, IBM presents "A Christmas Carol" starring George C. Scott on CBS at 9PM (ET).

Tomb slab marks grave of Angelico, at Santa Maria sopra Minerva in Rome, his church when he died.

Marco museum. The pope ordaining St. Lawrence as a priest in third-century Rome in the Vatican chapel is none other than Angelico's patron Nicholas V.

Pope, saint, Michelozzo and the crucified Christ—each is bathed in a kind of triumphant serenity. The serenity has not sat too well with some critics who would have preferred a little more spice, a little more *Angst*, in their Angelico. Berenson speaks of his "child-like simplicity" and says he was constitutionally incapable of seeing or understanding evil. Angelico would probably have disagreed. He was quite aware of the malice, cruelty and suffering in the world outside his monastic walls. He himself, according to the doctors who examined his bones when they were dug up (while a street was being widened for a tramway line) in 1915, must have suffered horribly from arthritis, but despite the pain in his hands from working in plaster, it is believed that he continued to paint in fresco up to a year before his death. He did not try to whitewash reality: the blood runs in torrents of bright red down his crucifixes, and rises in fountains from the severed veins in the necks of his decapitated saints.

Still, horror was only part of the whole, and the whole in the end was happy. Suffering and evil disappeared when the saints went dancing into Paradise.

Time only for the essentials

So he carried his message singlemindedly to the world till the day he could no longer pick up a brush. He never had time for anything but the essentials. There is nothing extraneous in an Angelico painting; everything is in its proper appointed place.

People were gossiping about his saintliness during his life, and took to venerating him after his death. He was always a particular favorite of the Florentines, and they soon took to calling him *beato*, or blessed—in the Catholic hierarchy, one step short of being a saint. For 500 years the Church ignored repeated requests to give him formal recognition, on the grounds that there is no record of any miracle performed through his agency. To this, his latter-day admirers have generally replied by quoting the words of Pope John XXIII when the same comment was made about Thomas Aquinas: *Quot articulos scripsit, tot miraculos fecit*, meaning everything he wrote was a miracle. The groundswell of appeal at last broke through the Vatican walls and in October 1982 Pope John Paul II signed the decree allowing his date of death, February 18, to be celebrated, obligatorily in the liturgy of the church of Santa Maria sopra Minerva in Rome, where he was buried, and optionally in other Dominican churches throughout the world, giving official sanction to the term which had been applied to him by the public for the previous 500 years: *beato*.

Two music-making angels from a band of 12 that surround Linaiuoli triptych in San Marco museum in Florence: quintessential Angelico, these graceful images evoke the joy of the saints and the blessed as "they went dancing into Paradise."

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*All-wheel drive as defined by Audi differs from the traditional American concept of four-wheel drive. The Quattro is not an off-road vehicle. Rather, it is a vehicle that delivers power to all four wheels equally and not just in rain or snow. But in virtually all road conditions

**See your dealer for details.

Audi

By Fred Strebeigh

To his modern fans, Sherlock is still worth a close look

Nearly a century after his literary debut, the greatest detective the world has known is the hero of a whimsical American cult

A scion of the times, members of a Holmes club in San Francisco show up suitably dressed for a meeting.

In the winter of 1887, a declining London magazine called *Beeton's Christmas Annual* published a tale of murder titled "A Study in Scarlet." Written by a struggling provincial doctor, the story had suffered multiple rejections before arriving at *Beeton's*, which considered it "cheap fiction" and paid the poor doctor wretchedly. *Beeton's* soon failed. But by then it had launched probably the most successful literary character of the past century and, some would argue, of all time—the great detective, Sherlock Holmes.

Anyone who reads that first tale—I was introduced to it when I was 14, likely the median age for meeting Sherlock Holmes—finds the protagonist in full stride. He mocks his most eminent predecessor, C. Auguste Dupin, the detective created by Edgar Allan Poe. He dismisses the London police as a bad lot and treats his loyal friend and chronicler, Dr. John H. Watson, as a dummy. He boasts that his deductive powers allow him to judge a man's profession from such details as his expression and his trouser knees. He grouches that crime and criminals have deteriorated so far that none can test him. And finally, of course, he gets his man and then watches Scotland Yard steal the credit.

Arrogant, brilliant, unappreciated, Holmes soon bestrode the world. His cases can be read in 57 languages, including Azerbaijani, Frisian and Urdu. The works of his creator, Dr. Arthur Conan Doyle, have earned royalties in at least 72 currencies. Though Holmes himself rarely left London, his image has circled the globe on stage, screen, radio and television, personified by such actors as William Gillette, Basil Rathbone and now Jeremy Brett.

Lean and angular, dressed in deerstalker hat and inverness cape, smoking a pipe and wielding a magnifying glass, Holmes remains—nearly a century after his debut—the world's detective. But no land on Earth—not Japan or England or Denmark (all of which have Holmes fan clubs), not Iceland or India or Armenia (all of which have published his tales)—gives him the reverence that he receives in the United States. Strange as it seems, the British sleuth has become one of the great American heroes. And once again this year, as they have for decades, Holmes' innumerable fans here paid him homage in their often peculiar ways:

• The Persian Slipper Club of San Francisco gathered in America's best replica of the sitting room used by Holmes (p. 64). Bullet holes shot in the wall spell out the initials of Queen Victoria. A jackknife stabbed in its mantelpiece pins down mail. A Persian slipper near the hearth stands ready to hold tobacco. The room sits

Holmesiana collector John Bennett Shaw observes miniature of The Master through a magnifying glass.

Photographs by Chad Slattery and Fred Strebeigh

on the top floor of an otherwise ordinary Holiday Inn.

• *The Baker Street Journal*, edited by an English professor in St. Louis and published by the Fordham University Press in New York, ran essays in what it calls the "Higher Criticism," which typically ponders where Holmes lived in London, whether a murder occurred in 1887 or 1889 or why Doctor John Watson's wife once called him "James." A recent article by literary sage Jacques Barzun argued that anything erroneous or inconsistent in the Holmes stories could be blamed on copy editors.

• The Men on the Tor of Connecticut met at a castle (p. 66) once owned by William Gillette, the American actor who wrote and starred in the play *Sherlock Holmes*. Members considered, among other matters, how to obtain an old brick from an office building that encompasses 221B Baker Street, the London address at which Holmes supposedly lived. Anticipating the brick, one member had left a hole in his new fireplace.

• A librarian at Colorado State University readied more than 8,000 entries for the next volume of his prize-winning bibliography of Holmesiana. Listing only publications from 1979 to 1984, his work lends support to the claim that more is written about Holmes than any subject except Shakespeare or the Bible.

• More than 190 members and guests of the Baker Street Irregulars, the best-known and longest-established Sherlockian society in the world, held their 53rd annual dinner in New York, where they celebrated Holmes' birthday and toasted him as "our best friend."

Sherlockian figures in the Shaw collection include a stoneware bust (center) and "Sherlock Ham" (right).

The Holmes centennial in 1987 will propel a new wave of activity. "A Study in Scarlet" will appear in an anniversary edition published by Daedalus Press of Minneapolis. Travel agents will run centennial tours to Holmes shrines in England and Europe. The Culinary Institute of America (SMITHSONIAN, December 1983) will cook up a centennial feast—the fourth in its series of Holmes extravaganzas. Both Stanford University in California and the College of William and Mary in Virginia will host Holmes seminars to honor the occasion. But after this wave crests, the great reservoir of American enthusiasm for Holmes will remain undiminished.

In an attempt to understand that enthusiasm, I recently spent three months traveling across the country to meet some of Holmes' thousands of admirers. I first had to learn a new language. Fans became *Sherlockians*. The 60 original Holmes stories became the *Sacred Writings* or, more simply, the *Canon*. Arthur Conan Doyle became merely the *Literary Agent*. As such, he represented Dr. Watson, who became not Holmes' fictional chronicler but the true *author*.

When a Sherlockian achieves the pinnacle of Canonical knowledge, he becomes a Baker Street *Irregular*, if he is a man. Women, as rule, become *Adventuresses* of Sherlock Holmes. Each Irregular or Adventuress receives a name from a Holmes case, which becomes his or her *Investiture*. I met, for example, a petroleum geologist named "Black Peter," a publisher named "The Cardboard Box" and a consultant named "The Giant Rat of Sumatra."

Most American Sherlockians, whether or not they reach the pinnacle, join an offshoot of the Irregulars called a *scion*. Some scions take names directly from Canonical adventures: "The Speckled Band" of Boston or "The Six Napoleons" of Baltimore. Others make adjustments: "The Hounds of the Baskerville" of Chicago or "The Solitary Cyclists" of South Bend. Still others play loose: "Boss McGinty's Bird Watchers" of Wilkes-Barre, "The Confederates of Wisteria Lodge" of Atlanta or "The Great Alkali Plainsmen" of Kansas City. From Alaska ("The Bering Straits Irregulars") to Florida ("The Tropical Deerstalkers"), more than 80 scions hold meetings in at least 39 states, and what unites them all is Sherlock Holmes—

In his Holmes library, Shaw displays an elaborate pipe and a doll that bears some resemblance to its owner.

the best and wisest man who ever lived, "The Master."

Meeting across the land? Speaking a language others cannot understand? Calling themselves strange names? Honoring as real a man whom most of the world believes is a splendid fiction? Sherlockians may be this country's most benign cult—highly literary, utterly whimsical—but a cult they are, indisputably, and one of enormous proportions.

Other nations, to be sure, honor Sherlock Holmes. In England, for example, the corporation whose headquarters encompass 221B Baker Street employs a secretary to answer every letter sent there for Holmes. But four of every five letters, some 800 of 1,000 a year, come from America. In England, also, guides lead tours in Holmes' supposed footsteps—from Charing Cross Station to Scotland Yard to the Sherlock Holmes Pub. But nine of every ten Holmes-walkers are American. Even the membership of England's most important Holmesian club, the Sherlock Holmes Society of London, is one-quarter American. According to the society's chairman, Anthony Howlett, a retired maritime lawyer, British Holmesians are interested in serious scholarship. "Americans go more for the fun of the situation," he says. "You like dressing up much more than we do." He pointed to the deerstalker emblem woven across the wings of his butterfly bow tie. "That," he said, for a Holmesian, "that is about the height of eccentricity."

What an English Holmesian calls eccentricity, an American Sherlockian calls dedication to the cause. In New Mexico, for 15 years on the Thursday after Halloween, "The Brothers Three of Moriarty" have gathered at the Frontier Saloon which sits just west of the Chaparral Truck Stop on a strip of old Route 66 that runs through the town of Moriarty. They come from across the state to curse the memory of Holmes' archenemy, the villainous Professor Moriarty. They offer toasts to Holmes. They present scholarly papers. They take quizzes on stories from the Canon. Around 11 P.M., they pick up a shovel. Wearing deerstalkers and singing anti-Moriarty verses, they walk east to a vacant lot to renew the "Moriarty Manure Memorial." Over the years the memorial has received contributions from a Texas longhorn, a North Dakota bighorn, an Australian kangaroo and a Saudi Arabian camel. The scion's Big Brother, John Bennett Shaw (above), jokingly claims that the camel's contribution was "one of the most appropriate things that's ever come into this country by diplomatic pouch."

Shaw, at 73 years and 235 pounds, serves informally as big brother to more than his scion. Working at his home in Santa Fe, he advises much of the Sherlockian

Replica of Holmes' study at a hotel in San Francisco is filled with items that had significance in his career.

Holmes' unanswered mail is pinned to the mantelpiece with his jackknife.

Bullet holes in the wall spell out the initials VR, for Victoria Regina.

Magnifying glass, compass, other tools of Holmes' trade lie on his desktop.

Pipe rests near Persian slipper like one Holmes kept tobacco in; he studied *London Times* for clues.

Carrying case for decanters (left) and a gasogene used to make soda are mentioned in Holmes stories.

world from an 18-foot-square inner sanctum. Around its walls stretch books, eight shelves high and mostly two rows deep. Removed from their little room, Shaw's 12,000 volumes would stretch the length of London's Charing Cross Station. Into other rooms he tucks Sherlockian chess sets and alarm clocks, pillowcases and knee socks, along with 4,000 periodicals and 20,000 press clippings. In a freezer he keeps his Sherlockian chocolate rabbits (they wear deerstalkers).

As we sat in his library, Shaw—who has worked as a bookstore owner, an oil driller and a funeral director—took me through a history of Holmes in America. Although English scholars early in the 20th century produced the first Higher Criticism on Holmes, in the 1920s an American doctor from St. Louis, Gray Chandler Briggs, made a breakthrough: he chose to study Holmes as a real person. Briggs traveled to England to track down Holmes' house, which he decided must have stood at 111 Baker Street (221 did not yet exist). In 1930, Christopher Morley, columnist for the *Saturday Review of Literature*, wrote an introduction to the first American collection of all the Holmes stories, popularizing the great detective as a subject for careful study. The flames of Sherlockian interest spread quickly, with Morley acting as bellows. By 1934, through his column in the *Saturday Review*, he had created the Baker Street Irregulars, taking their name from the street urchins Holmes used to ferret out information. Its creation inspired the rapid organization of its first overseas counterpart, the English Sherlock Holmes Society, and the first American scion, the Five Orange Pips of Westchester County, New York. The Irregulars soon included America's greatest Sherlockian biographer, Vincent Starrett, and the greatest Sherlockian politician, President Franklin D. Roosevelt, who never attended a meeting but who contributed to the Higher Criticism with a series of letters arguing that Holmes was an American.

Before Roosevelt joined the Irregulars, John Bennett Shaw had started his Sherlockian library, in 1937. Eventually it will move to the University of Minnesota, where it will merge with the university's own collection to create the world's leading Holmes center. For now, Shaw continues to serve as unpaid librarian to all Sherlockians. Requests flow in—from an Argentinian studying a Scotland Yard detective, an Englishman preparing a Holmes biography, a Nebraskan analyzing Holmes' use of the telephone, a Japanese seeking first editions. He responds with detailed letters and some 400 photocopies per month, bearing almost all the expenses himself. "Bread cast upon the water," Shaw says.

Fred Strebeigh is a writing teacher at Yale University and a casual student of the Canon.

Religious zeal typifies more than one Sherlockian. Richard Warner of Tulsa, Oklahoma, a retired forklift dealer, recently wrote on Holmes' behalf to Pope John Paul II. Warner sought to correct an error of omission. Even the moon had a geographical feature that commemorated the great detective—Sherlock Crater, named by Sherlockian astronaut Harrison Schmitt. But the Earth had no place honoring Holmes.

On a warm day, wearing a tweed deerstalker, Warner led me toward the Earthly feature of his choice. As we ascended 260 feet from the road to the summit of an Oklahoma hillock, he described his struggle to name it for the great detective. After meeting most requirements of the U.S. Board on Geographic Names, the agency that is responsible for official designations on federal maps and other publications, Warner hit an obstacle. The hill's owner had died, leaving it equally to two universities and the Catholic Diocese of Tulsa. The universities agreed to Warner's request, but the Bishop of Tulsa objected. "I would prefer," the Bishop replied, "a more meaningful name in conjunction with our work."

A case of Divine intercession?

Balked, Warner went to the top. In a deferential missive to His Holiness, he contended that Holmes twice had served the Vatican. Although he acknowledged that his was merely "fictional service to a prior pope," Warner asked for papal intercession. The response came from the Bishop. The way was clear—not because of a papal bull but because the Diocese no longer owned a share of the hill. As he finished his story, Warner gazed in late afternoon light toward the gleaming skyline of Tulsa, his feet firmly set on the summit of "Holmes Peak." He refers to himself as its "Head Sherpa."

Not all Sherlockians go to the Vatican to show their dedication. Some go to the racetrack. In Baltimore, I joined 77 Sherlockians at Pimlico for a horse race they have sponsored for 16 years, The Silver Blaze. It commemorates the case in which Holmes restored England's greatest thoroughbred, Silver Blaze, to his rightful place in the winner's circle. Other Sherlockians sponsor Silver Blaze races at tracks in New York, Chicago, St. Louis and Los Angeles.

The Sherlockian bettor, I learned, doesn't look for a horse with fast times or impressive victories. He looks for links to the Canon—a jockey named Watson, an owner named Sherlock or a horse racing in the colors of the original Silver Blaze. Wayne Swift, a Maryland engineering consultant, proved most Canonically prepared—although not most Canonically committed. He had just completed a study of all American thoroughbreds descended from Isonomy, a real-

Wayne Swift (left) and Peter Blau (right) congratulate winning jockey after Sherlockian race at Pimlico.

Holmes enthusiasts visit Connecticut castle of famous Sherlockian actor and playwright William Gillette.

life English champion that Holmes called the famous ancestor of Silver Blaze. Isonomy descendants, said Swift, remain prominent in American racing. But the program for that day's race showed no Isonomy blood. That, Swift felt, freed him to bet the horse with the best racing history.

Peter Blau, however, a Washington, D.C., geologist who organizes the Pimlico Blaze, stayed close to Holmes. He chose a horse with the same program number (4) and same colors (black and red) carried by Silver Blaze in the Canon. Although Blau's horse entered the race with the second-worst odds in the field, he bet it to win, place and show. Swift finished out of the money; Blau doubled his bet.

Sherlockian devotees need not create memorials or wager money. Most often, they pursue knowledge. On the Lower West Side of Manhattan, the Priory Scholars hold bimonthly meetings at a restaurant called Bogie's. They also take bimonthly quizzes. The quizzes challenge members to recall "Mycroft's yearly salary" or the "length of Oberstein's prison sentence" or the "number of plans taken from the Woolwich arsenal"—all parts of the same Holmes story.

Such quizzes may seem exclusionary—intended to flunk out nonscholars. In practice, however, most scions exclude no one. The Priory Scholars recall with fondness a recent meeting to which a member, talking on WABC radio in Manhattan, spontaneously invited all his listeners. Dozens of strangers arrived at Bogie's. "We had a great time," says Richard Wein, the scion's Co-Bursar. "We're always looking to expand people's horizons."

Tuning in to Sherlock by radio

Openness characterizes other scions as well. The Felonious Commuters and the Mini-Tonga Society made me a member simply because I requested information. The Scowrers and Molly Maguires handed me a membership card at my first meeting. The most accessible scion in America may be the Sherlock Holmes Wireless Society, which meets within hearing range of any ham-radio operator.

But not all of the groups are so unrestricted. The Red-headed League grants memberships only to Sherlockians who have red hair. Members must submit a hair sample for the League's archive. The Bruce-Partington Planners claim to admit only Sherlockians who work "inside the military-industrial complex" and who can pass an entry exam that demands "access to classified data." The Planners are coordinated by an official from the Pentagon.

The only closed societies that engender resentment are those few that exclude women. Susan Rice, a member of the Priory Scholars who has won a national

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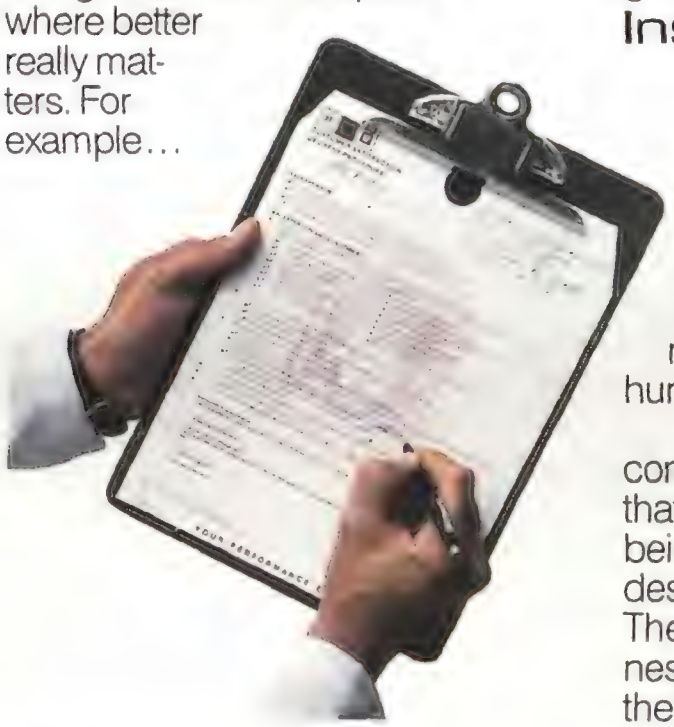

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award in recognition of the year's best Sherlockian criticism, honed her Canonical skills partly in an effort to win admission to an all-male scion, Hugo's Companions. On a tie vote of the Hugo's, she lost.

The most conspicuous society that does not welcome women to its meetings is the Baker Street Irregulars. Its mostly-male history began oddly. In 1934, when Christopher Morley announced plans to form the group, he wrote that "all those" who sent him correct solutions to a difficult Sherlockian crossword puzzle would "automatically become members of the Baker Street Irregulars." Of the 21 solutions which Morley judged correct, at least seven came from women. Morley then invited the men who passed the test, along with a few who had made no attempt, to the first formal meeting of the Irregulars. "This first meeting," said the invitation's final sentence, "will be stag." Stag they have remained for 52 years—despite the Investiture of two female Irregulars.

What pulls Americans so strongly, 100 years after his literary birth, toward Sherlock Holmes? Isaac Asimov, the well-known science-fiction writer (invested by the Irregulars as "The Remarkable Worm Unknown to Science"), suggests that Holmes may be "the most successful fictional character of all time" because he represents the triumph of the "gifted amateur who could see clearly through a fog." Dr. David Musto ("Dr. Anstruther"), of the Yale Medical School and the Yale Sherlock Holmes Society, says that Holmes appeals to modern readers because he represents a life unencumbered by the petty details of human existence. When you read a Holmes story, says Musto, "you enter a world in which people have breakfast but never use the toilet." Holmes' world is an "exciting place, but it's also peaceful—a world of modified danger."

Other Sherlockians give different answers. At a meeting of an inner circle of the Irregulars, often called the "Sacred Six," I heard a range of explanations for Holmes' appeal: the human scale of 19th-century London, said "The Cardboard Box." The influence of the age of radio that began in the 1930s, said "Wiggins," when the voices of Gillette and Rathbone brought Holmes to the homes of millions. The mythic vitality of the characters, said "Sahara King."

The Canon totals only 60 stories, said the "Commissionaire Emeritus," Dr. Julian Wolff, a retired physician. "The real scholars," continued Dr. Wolff, who presided over the Irregulars from 1960 until his retirement this year, "are studying Shakespeare and the Bible. But we have a very limited amount of knowledge. And we can be professors, and be very, very wise. Because it's easy to know it all."

These and other answers I have heard ring true enough, but something more basic may lie beneath them. Sherlockian America links travel agent and tax accountant, funeral director and forklift dealer, commercial artist and Army officer, legal secretary and state supreme-court justice, stockbroker and music-store owner. In a country that seems large and fragmented at times, Sherlockians have forged a nation of neighbors. That nation depends on one great game. The game depends on a few basic rules: that Conan Doyle served merely as *Agent*; that Watson *wrote* the stories; that Holmes *lived*. These rules stand no more open to challenge than the rule that a baseball hit left of third base will be called a foul. Sherlockians grow numerous because in America, as Holmes would say, the game is afoot. And any of them, traveling in almost any part of the country, know they can find a kindred spirit ready to play their game.

No explanation, of course, covers everyone. On my last day in pursuit of Sherlock Holmes in America, a young man approached me at a meeting of the Scowrers and Molly Maguires. As a child, he told me, he hated The Master. But years had softened his hate. Now he reads one tale from the Canon each day and listens to Holmes stories on his Walkman. He belongs to eight scions. He has just bought his first three deerstalkers. His involvement began years before he was born. The woman who became his mother married a machinist in Boston named Holmes. When their first son was born, she gave him a name that people do not forget. His sandy hair may not remind anyone of The Master. Nonetheless, after months of looking, I can report that—in the hundredth year since the great detective first appeared in print—Sherlock Holmes is alive and well. He runs a motel in San Francisco.

As a child, Californian Sherlock Holmes resented his name but now he enjoys playing The Master's role.

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By John Skow

This Florida spa holds a surprising lode of prehistory

Underwater archaeologist Wilburn Cockrell keeps bringing up relics of the Pleistocene age from the depths of Warm Mineral Springs

At 155 feet, a scuba diver breathing ordinary compressed air fights to hold the barest sense of simple thought. Subtleties are not possible. Nitrogen narcosis slows the brain, and may addle the equilibrium until the world seems to be spinning, or up seems to be down. Routine matters of breathing and handling diving gear may seem hideously difficult or too unimportant to bother with. Decisions are precarious, and any change in plan not practiced in predive drills can become an emergency. The effort of trying to concentrate while effectively half drunk is exhausting. The physical drain of adjusting to the pressure of six atmospheres leaves the diver limp for hours afterward.

Never mind all this. Wilburn A. Cockrell, a fiery and determined scientist called "Sonny" by his friends and adversaries, has underwater archaeology to do. He is kneeling on a fiber mat, probing with a trowel in spongy muck at the bottom of a trench he is digging into the side of a steep hill, 155 feet under the surface of Warm Mineral Springs. The Springs is a water-filled, hourglass-shaped sinkhole 20 miles south of Venice, near Florida's west coast. It is about 80 yards in diameter, and 230 feet deep at the point where warm, heavily mineralized water enters from regions far below. Some years ago it was developed as a spa, and now older people, most of them central Europeans accustomed to health spas in the old countries, come by the hundreds to gossip and paddle around the edge of the Springs.

The spa advertises as Ponce de León's Fountain of Youth, and the 87-degree water is supposed to be good for arthritic bones. It is certainly bad for metal. Dimes and quarters corrode in the stuff. Stainless steel deteriorates so fast that diving equipment must be broken down and cleaned after every dive. Bones are another matter. In 1973, when the world and Cockrell were younger and all things seemed possible, he brought up a nearly complete skeleton of an adult Paleo-Indian male from the 43-foot level of the Springs. Peat surrounding the skeleton was dated at 11,000 years old. No earlier intentional burial site has been found in North America.

Bones of Ice Age land mammals, a saber-tooth cat and a giant ground sloth, still lie below. The saber cat and a human mandible were found in a clay layer 12,000 years old and the find was the best evidence that the two species coexisted in the Western Hemisphere. Cockrell is driven by an almost prophetic belief that discoveries equally important still lie ahead.

A curiosity of the Springs is that the water contains no dissolved oxygen, except in a layer 15 or 20 feet thick at the surface, where some garfish and a few minnows manage to live. Thus, organic matter below the surface cannot decay or be disturbed by scavengers, since decay bacteria and scavengers require oxygen. Anything organic that gets into Warm Mineral Springs—a leaf, a dead animal, a New York Mets baseball cap—will stay as it is for an exceedingly long time, which is to say until some human searcher finds it.

The huge cone of debris at the bottom of the sinkhole (p. 76) consists of everything that has ever fallen into Warm Mineral Springs, beginning with frag-

Emerging from a 155-foot dive in the Springs, Cockrell finds himself surrounded by curious health-seekers.

Photographs by Robert Holland

ments of the limestone that roofed the area and then collapsed perhaps 20,000 years ago. Burrowing into it Cockrell cuts out a soft lump the size of a hen's egg. Eureka! He is working in the dark by the light of two diver's flashlights surrounded by a thickening drift of silt that he has disturbed. But he knows what he has found: one more alligator coprolite, roughly 2,500 years old. Recovery of the alligator dung is the Warm Mineral Springs Archaeological Project's entire accomplishment for the day. Cockrell's half hour of bottom time, including two minutes for a crash descent, has elapsed. Some days you dig up an 11,000-year-old skeleton, and some days you don't.

But Cockrell is not disappointed. Archaeologists think of coprolites as time capsules that tell not only what animal produced them, but what the animal ate, including sediments containing pollen that may provide valuable data about prehistoric plant life.

Cockrell excavates slowly and methodically, recording what he finds. The first few inches of his trench produced the sort of treasure that ten-year-olds might keep in cardboard boxes: a 1930s Coca-Cola bottle, a 78-rpm phonograph record, a couple of garfish skeletons and, somewhat deeper, deer-skull fragments and a catfish skull bone. Recently Cockrell found a hickory nut, indicating a cooler climate; the nearest hickories now grow 400 miles to the north.

As he rises to about 100 feet, he can see dim light from the surface. At 30 feet he rests for two minutes, holding the lowest rung of a decompression stage he and assistants, archaeologists Skip Wood and Steve Koski, built from white PVC pipe. Slow decompression is a necessity if he is to avoid the extremely painful and sometimes fatal calamity known as the "bends."

He rests at 20 feet for 11 minutes and then, at the ten-foot level, pauses for 25 minutes. Here he breathes pure oxygen intermittently from a tank tied to the de-

A five-inch fossil tooth, shed by ancestor of great white shark, lies in Miocene bedrock at 45 feet.

Cockrell displays a prize find, a rib from a saber-tooth cat that lived approximately 12,000 years ago.

Rising from 50-foot dive, Cockrell holds clump of tufa, a rare, subaqueous geological formation.

Coprolite found at 155 feet will provide data on prehistoric alligator's food chain and environment.

compression staging. Using oxygen at a lower depth can cause toxic reactions, but breathing the gas at ten feet forestalls an occurrence of the bends. The light here is greenish-yellow, intense: bright sun, rocking and shifting overhead in stained-glass segments, diffracted by small waves as the elderly swimmers above slowly tread water.

At last Cockrell breaks the surface. His wife, Barbara, 30, a slim, pretty woman who is the project's manager and who also works as a diver, waves from the shore where she has timed the dive's progress. Sonny's routine after a deep dive is to stand chest-deep in the water for a few minutes, relaxing. The trouble is, the old people crowd around and ask questions.

"Catch any fish?"

"No," Cockrell says, "not today."

"What's down there, dinosaurs?" Cockrell hasn't seen any. In fact, among the remains visible below the surface are a giant shark tooth and the partially excavated fossil of a dugong, a relative of the manatee, that dates from the era perhaps 30 million years ago when this part of Florida was sea bottom.

"So, keep looking." Sonny nods. He will keep looking. Sometimes, when he is feeling good after a dive, he will stand in the water with his mask around his neck and his beard dripping and give an impromptu seminar on Warm Mineral Springs.

Ledge is grave site of a Paleo-Indian

Cockrell is a gifted lecturer, and his story of the Warm Mineral Springs dig is worth waiting for. The key is hidden in a sentence printed a few paragraphs earlier in this account, which speaks of the ancient Indian skeleton excavated from a burial site at "the 43-foot level of the Springs."

Was the Indian's burial, then, somehow performed underwater? Of course not. Was the body simply that of a man who drowned in the Springs, or was thrown in after his death? No, this was an arranged burial, done in the fetal position often used by early cultures, in a niche in the wall of the sinkhole, and the end of a spear-thrower (or atlatl) carved from shell was buried with the dead tribesman. Further, two sizable pieces of broken-off stalactites were wedged across the front of the burial place, obviously to keep marauding animals from attacking the body.

Stalactites underwater? Yes—evidence suggests that only a few thousand years ago, sea levels around the Earth were much lower than they are now, because a great part of the planet's water was locked up in the ice sheets of Pleistocene glaciation.

How much lower? How much land was exposed then that is covered now? With what effect on, for instance, the migratory movement of primitive people?

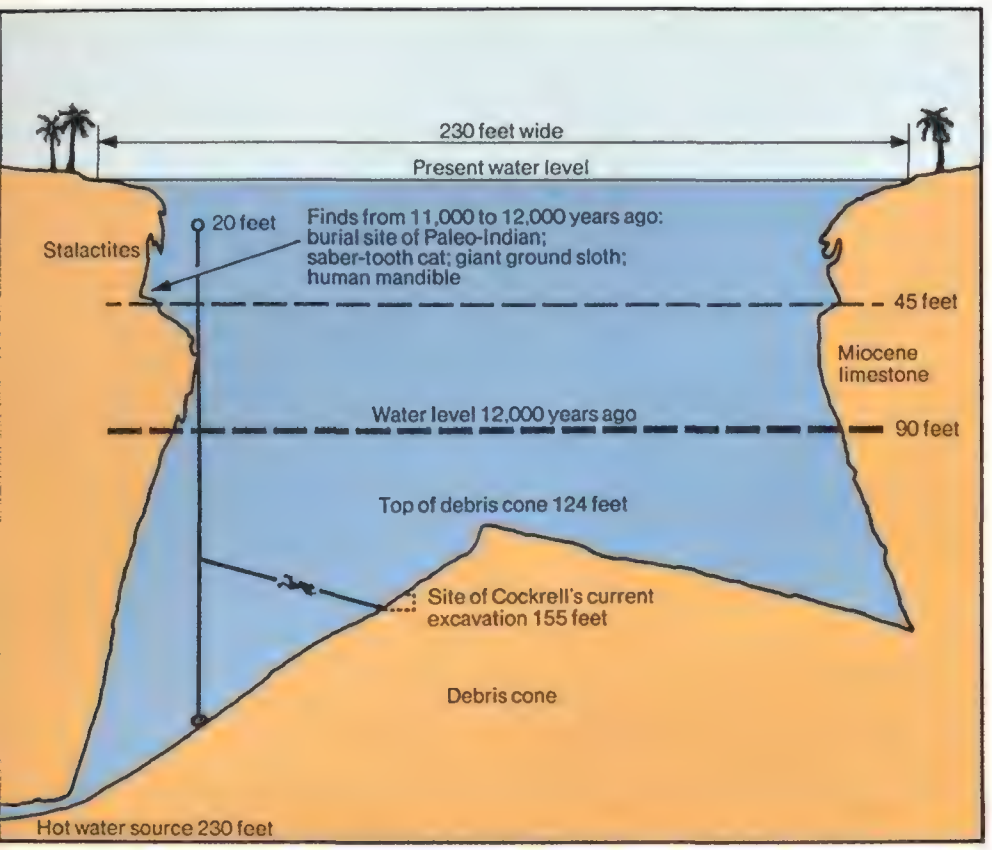

Diagram shows Cockrell's digging site, earlier finds, and down line used by divers for ascent and descent.

With what loss of evidence to present-day scientists who are looking for the first traces of people in the Americas?

Answers depend on how far back you go, but the mile-thick glaciers of the last major advances of the Ice Age solidified enough water so that ocean levels were at least 100 feet and perhaps more than 300 feet lower than today. Groundwater levels at places like Warm Mineral Springs are tied to sea levels, and so were correspondingly lower. To a geologist this is commonplace, a minor by-product of the Pleistocene epoch, less interesting than the great, unanswered central question of why the Ice Ages occurred at all.

For most archaeologists of 15 or 20 years ago, the fact of lower ocean levels during the Ice Ages was not disputed, but neither did it enter much into their theories and speculations about early Man. For one thing, it used to be assumed that the last Ice Age ended 20,000 years ago, before there was very much activity in the New World. If this were the case, there was little reason to worry about sea-level change. Thus if no traces except the remains of a few highland hunting camps had been found of the first native American people to reach the East Coast of North America, it was assumed these people were only migratory hunters who left little evidence of their passing.

The writer, an expert climber (SMITHSONIAN, *June 1985*), *learned scuba diving so he could accompany Cockrell to 155-foot depth.*

Yet current estimates have it that glaciers still dominated North America as recently as 10,000 years ago (some scientists regard our tick of history as merely a warm interglacial stage of the Pleistocene). Could early men equally well have been residents of coastal, river-mouth communities, at sites now inundated, who regularly sent out hunting parties? If no traces were found on islands in the Bering Strait of the early Asians thought to have traversed this "land bridge" to reach the Americas, could one answer be that migration generally followed shore routes, where both sea and land foods were available? And might evidence of this passage still be discoverable, on old shorelines now far underwater?

According to Cockrell, the prevailing view among archaeologists in the '60s, when he did his graduate work at Florida State University, was that 1) there was not much worth studying underwater in Florida; 2) if anything worthwhile were underwater, it had fallen there; 3) besides, storms and currents would have destroyed it; and 4) anyway, you could not conduct a methodical archaeological dig underwater, so any discussion of possibilities was pointless. Yet to Cockrell, early suggestions to the contrary were tremendously exciting. He recalls a "simple, but momentous conclusion" in a 1966 paper by K. O. Emery and R. L. Edwards of the Woods Hole Oceanographic Institution, to the effect that the Atlantic continental shelf might contain the drowned habitations of early Man. And Reynold (Rey) Ruppé, a professor under

Hands show size of museum replica of prehistoric ground sloth skull that Cockrell found in 1976.

Teeth from another ground sloth skull still lie embedded in protective clay on ledge 45 feet down.

whom he did his PhD course work at Arizona State, believed not only that sea-level change had flooded prehistoric coastal settlements, but that diving archaeologists could find and investigate them.

The first diver to explore Warm Mineral Springs thoroughly, however, was neither Ruppé nor Cockrell. He was Bill Royal, a retired Air Force Colonel, now 82, who settled in Florida in the early '50s. An adventurer, a rider of sharks, a man of enormous physical vitality, Royal rightly saw it as an important site. He had learned how to use primitive scuba gear of the time. And he used it to discover old bones.

Royal is proud of the scientific value of his finds. He brushes aside as so much jealousy the charge that he is what some archaeologists contemptuously call a pot hunter. When he welcomes visitors to his house near the Springs, he displays an unlabeled jumble of treasures. The house is built around a huge fireplace faced with mastodon teeth and stalactites from the Springs, sliced into sections, with a human femur or skull stuck into the mortar here and there."Some of those bones are at least 10,000 years old," he will say to a visitor.

Cockrell, whose relations with Royal have soured, estimates that, largely through Royal's activity, 80 percent of recent subaqueous muck on the Springs' upper ledges, 50 percent of the underlying 10,000-year-old peat zone, and 30 percent of the older clay in the lowest layer has been destroyed. The Colonel is not a scientist and, Cockrell says, he paid little attention to a stratigraphic approach to archaeology, which involves grids for measurement, note taking and analyzing the context in which objects are found.

Once, with an NBC underwater photographer at hand—an amazing coincidence, says Cockrell—the Colonel brought up an old skull out of which, he says, something was oozing that might have been brains. Given the Springs' anaerobic water, this could well have been the case, but attention to detail was intermittent in the early years of exploration there. A "Yeah, sure," reaction from many in the archaeological community to gaudy claims about Warm Mineral Springs was not surprising. But the 10,000-year-old skull, undoubtedly genuine, was an important find.

Royal's reply is that he understood the significance of the Springs' stalactites when some scientists were still scoffing, and that he was making important discoveries underwater when they said there was nothing to be found. There was no question about it: the sinkhole's water level had once been far lower, as much as 90 feet or more below its present surface. Toward the end of the last Ice Age, its sides had been steep but climbable cliffs, whose overhangs 30 to 50 feet down were jagged with dripping stalactites.

Cockrell, then the Florida State Underwater Archaeologist, was invited to Warm Mineral Springs in 1972 by Doris Davis, the Sarasota County historian. Davis and Royal took him for an exploratory dive. In November of that year Cockrell found the buried skeleton. Space for excavation was so cramped he had to take off his tanks, suck a breath of air, and squirm

Cockrell checks contents of core made by hammering a pipe into top of debris cone 140 feet down.

An early Springs find, skull of a Paleo-Indian, caused an archaeological stir when recovered in 1973.

in for a few seconds of digging among huge boulders that had fallen onto the site 2,000 years after the body was placed there (so carbon dating of surrounding material later proved). When it was clear what had been discovered, he rigged an "airlift" operation to float the boulders away, harnessed to air-filled metal drums. So there could be no question that proper procedure had been followed, he called in other scientists to inspect the site before completing excavation, and invited Rey Ruppé, his former professor, and Vance Haynes of the University of Arizona, to help raise the bones. A photographer snapped a dark, brooding shot of Cockrell, in his diving gear, holding the wet skull. The photo, called the "Poor Yorick" picture around the project, is the most dramatic visual image of Cockrell's career, and it has been widely published. This, says the camera, is underwater archaeology.

Re-creating thoughts of a bear slayer

Cockrell was indeed caught up in a drama. More than once, he says, he dived by moonlight, and one time wedged his body in the fetal position in the niche at 43 feet where the dead man had rested for 11,000 years. Morning mist rising off the surface of the Springs stirred his imagination, and he wrote a kind of prose poem in which he tried to re-create the thoughts of the Indian whose skeleton he had exhumed. "He crouches motionlessly among the tangled roots of the storm-fallen hickory tree, joining all his nerve endings to those of the surrounding forest spirits, and waits. Spear-thrower, bear-slayer, legacy of his father, held lightly in his right hand, dart grasped gently between thumb and forefinger. . . ."

The spear-thrower part, a bit of worked shell, was not imaginary. It had been buried with the dead man and found by Cockrell, one of the oldest such artifacts discovered in the Western Hemisphere. In use it was bound to a stick, the other end of which was held in the hand, and it functioned as a third segment of the hunter's arm to propel a large dart or small spear. It was the earliest effective way of killing at a distance. Cockrell speculates that a considerable impact on cultural evolution may have proceeded from the mastery of the spear-thrower. If it made animal protein available in quantity for the first time, family units would have grown larger and been able to feed old people. That would have resulted in an increased role for the old as teachers and history-tellers, a longer childhood learning period with an increase in knowledge.

Such speculation is good fun and can be a necessary part of good science. But the larger part was the routine of measuring and recording. During the mid-'70s Cockrell and colleague Larry Murphy developed a methodology for underwater archaeology, a branch

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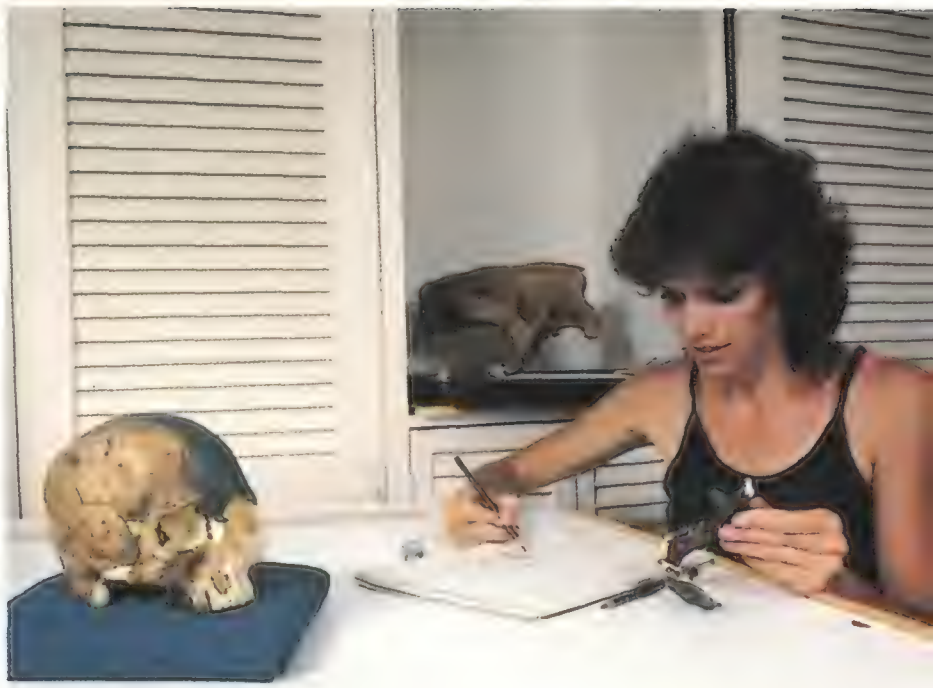

Barbara Cockrell, a diver as well as the site's project manager, makes a sketch of Indian skull.

of science that was still widely dismissed as mere shipwreck looting. They pegged out the Springs with stainless-steel wires and mountain-climber's bolts, so divers would have reliable physical reference points for mapping discoveries. Cockrell and Murphy were the first to use a system of video cameras and two-way phone communication to tape excavations as they proceeded, so that nondiving scientists had a way of participating in the digs. By identifying the marks of rodent-gnawing on the articulated skeleton of a giant ground sloth, they re-proved the obvious: that the animal had died and decomposed in air, not water, on a cliffside ledgeof the Springs that was later flooded by the rising water level. Analysis of the skeleton put the Paleo-Indian's height at about five feet four inches and suggested a weight of 110 pounds. The skull type resembled those found in the upper levels of the cave at Choukoutien, China, and the Vero and Melbourne skulls from Pleistocene bone beds in Florida, rather than the skulls from Archaic-stage Indians of 5,000 to 7,000 years ago found throughout the Southeast United States.

And there, for several years, matters stagnated. Diving costs money, and Cockrell's position as Florida's Underwater Archaeologist sank from lack of state funds brought on by heavy lobbying against him because of his strong stand against treasure hunting. He taught, brooded, explained and fumed, and finally, two years ago, won a $100,000 appropriation from the state to start up the Warm Mineral Springs project again. He and Barbara, recently married, moved back to the Springs. But the appropriated money, the actual, physical, good-as-gold check, was snarled in governmental red tape and did not arrive. And did not arrive. They wiped out their savings accounts buying supplies and diving gear. Barbara took out a loan on her car, and they spent that money. One day, as they prepared gloomily to sell their last object of value, an Oriental rug, Sonny's car was rear-ended by another motorist at a stop street. The fellow was in trouble with his insurance company already, and he offered Sonny $100 not to report the fender bender. Done! Sold! The stately march of science could resume, and more important, the Cockrells could buy some groceries. A couple of days later, the state's money faucet began to gurgle.

The first season was spent in trying to recover momentum. The elaborate stainless-steel mapping grid in the spring had corroded to nothing. Newly deposited silt and beach sand covered partly excavated sites. An old bathhouse offered as a field headquarters by the spa's owners, who loyally supported Cockrell and the project, had to be cleaned and painted. And a feud with Bill Royal had worsened. In 1977, Warm Mineral Springs was listed on the National Register of Historic Places and Sarasota County erected a plaque on the site naming Royal among those who had explored it. The Colonel was still eager to dive. Eventually the spa's owners ruled that Royal must not use scuba gear in Warm Mineral Springs. Each morning, however, he comes and swims for a half hour.

Cockrell, in the meantime, dives regularly to his deepening trench at 155 feet in the silt cone. A Sealab-type habitat at that depth, in which he and an assistant could live comfortably for several days at a time, would make the work easier and subject the divers to far less wear and tear. But the $300,000 second-season budget could not be stretched to cover the Sealab-type gear. More pressing needs include a decompression chamber. Cockrell, who is 45, came up "bent"

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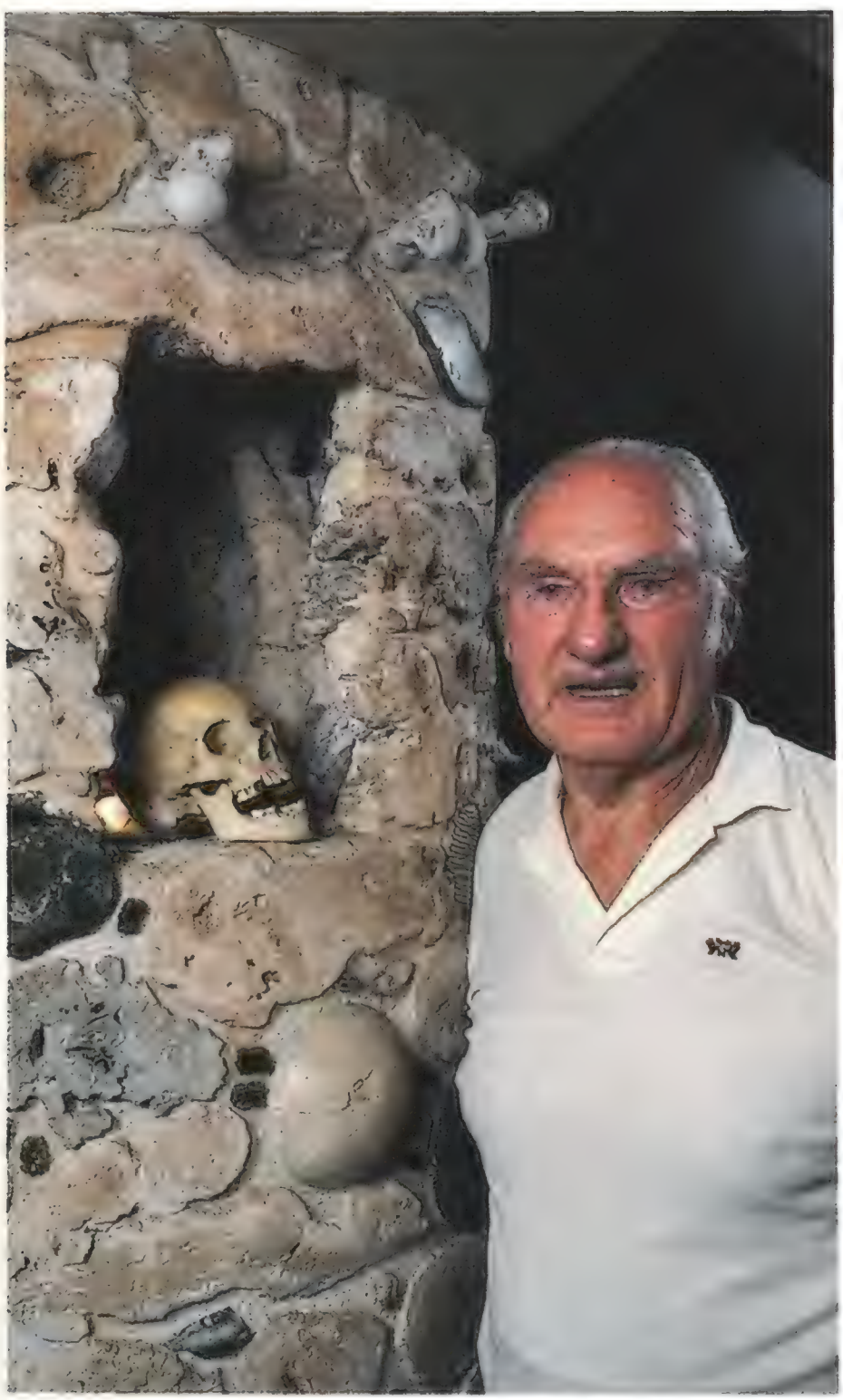
on one occasion. And Mike Bessette, a healthy young sheriff's deputy who dives regularly in his police work, surfaced after helping photographer Robert Holland shoot pictures at 155 feet. He felt strong and alert, he said, and he talked happily of having just had the best dive of his life. Ten minutes later he was feeling woozy and having trouble with his peripheral vision. An hour of resting and breathing pure oxygen brought him around, but there was no doubt that his body had just received a warning. This writer made a deep dive the next day without problems, but was exhausted physically until the next morning, and four hours after surfacing could not summon the mental concentration to read one of Cockrell's clear and straightforward scientific papers. My experience is in mountain climbing, not diving, and the draining of strength and mental sharpness seemed to me about as physically and mentally exhausting as I remember after a day's hard walking in the thin-air zone of, say, 22,000 feet.

Stubbornness keeps Cockrell adding a few inches a day to the depth of his trench, which will soon have to be shored up with braces and Plexiglas sheets. He also knows, he says, of more discoveries to be made at the easy 40- to 50-foot level of Warm Mineral Springs. A big discovery just now would help with the funding. But he leaves funding problems to his legislative ally, a state senator named Bob Johnson, who takes an interest in the project and sometimes dives there. Johnson deserves considerable credit for pushing the project's budgets through the Florida State Legislature, with enough money for a decompression chamber. Organizational matters Cockrell leaves to Barbara. For steadiness underwater, he counts on assistant Skip Wood, a big, solid ex-Navy SEAL who studies for a graduate degree in archaeology when he has time, and who works 40 hours a week as a sheriff's deputy—because the project can't pay him properly.

When Cockrell probes gingerly at his silt cone, perhaps he is simply taking what seems to him a simple gamble against good odds: his health against the certainty, as he sees it, of finding bones and tools older than anyone has seen in this part of North America. He is, after all, a serious scientist and his work has led him here. But perhaps explanations are simply words, and this submerged mountain of dung and debris, despite danger and good sense, is his Everest. He pulls down his mask and, walking backward in the shallow water to avoid tripping over his flippers, heads out for one more dive.



Retired USAF Col. William Royal, who began exploring Springs in 1958, displays some of his finds.

Holding decompression stage, a diver nears surface light, making his last, and longest, stop at ten feet.

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By Steve Yates

A pronghorn needs freedom to feel at home on the range

This prairie speedster will easily outrun most natural enemies, but one intruder it can not escape is a fence constructed by Man

The pronghorn antelope doe seemed a lonely figure as she picked her way across the immense grasslands of Wyoming's Great Divide Basin one morning last spring. But as she neared a low patch of sagebrush, up popped one fawn and then another. The doe nuzzled them in recognition and soon the coltish twins were gamboling alongside their mother, racing ahead on stiltlike legs, then speeding back to nurse.

Wildlife biologist Bill Alldredge was watching from a pickup truck parked half a mile away, his eye glued to a spotting scope mounted to the window. The doe was one that Alldredge had outfitted with a radio collar the previous fall; now he wanted to "tag" one of her offspring. She moved slowly and alertly along a low ridge, stopping to nurse one fawn while licking the other to stimulate defecation. In a few weeks she would join with other does, and their youngsters would play nearby in nursery bands, racing, butting like goat kids, competing for dominance. Until then, she would continue to browse by herself some distance away from the fawns while they spent most of their time in hiding, safe from coyotes, bobcats and golden eagles.

Suddenly, one of the twins dropped out of sight, then the other. Alldredge, his son Mat and I grabbed our gear, took a careful bearing on the Antelope Hills in the background and headed toward the distant spot. Even from just a few feet away, the first fawn seemed almost invisible, blending perfectly into the dark green shadow cast by a sheltering patch of sagebrush. She lay flat on the bare earth without seeming to breathe, her long muzzle stretched between her skinny forelegs, her elfin ears laid back against her neck. Alldredge, a slender, athletic man, sneaked up from behind with a catlike tread and slipped his long-handled net over her just as she bolted. She squirmed and protested with shrill bleats, but when the biologist put a blindfold over her eyes she calmed down. Alldredge weighed her at just under ten pounds and then attached a tiny radio transmitter to her ear. Meanwhile, her sibling had sprung up and darted past us, tearing through the brush at a speed few adult animals could match. The fawns were no more than three days old. In a month, not even a speedy coyote would be able to run them down.

If representatives of all the world's mammals were to line up for a race, the American pronghorn antelope would trail only the African cheetah after a few hundred yards. At the end of one-half mile, the pronghorn would be leading the pack, hardly winded. On a desert playa in Oregon, a sprinting buck reportedly overtook a car going 61 miles an hour. Over rougher ground, whole herds are capable of maintaining a 40-mile-per-hour pace for five or ten minutes. Dozens of anatomical adaptations—such as padded front hooves for shock absorption and enlarged trachea, lungs and heart for greater oxygen intake—enable the pronghorn to perform such feats. Even the laminated bones of its long legs are marvels of internal engineering. Alldredge, who is one of the few scientists actively working with the species today, has never seen a speeding pronghorn break a leg, though the terrain here is pocked with the holes of badgers, prairie dogs and ground squirrels.

Adapted to life on the prairie

"Pronghorn antelope are the least studied and least understood of all our big game animals," Alldredge says. "Deer and elk generate more money in hunting fees and so they get most of the research dollars. It's too bad, because pronghorn are the most beautiful, exotic-looking animals in North America."

Indeed, the pronghorn would seem perfectly at home on the plains of eastern Africa. The buck's black horns curve, lyre-like, above the forward-branching prongs; the slightly smaller doe has much shorter horns. The creature's long ears, oversize eyes and large black nostrils combine to detect the slightest hint of danger across vast prairies. The lean, compact body—the average buck weighs 125 pounds and stands three feet tall at the shoulders—is the color of dried

At a Montana preserve an alert buck sizes up visitors with huge eyes that can spot trouble miles away.

Photographs by Charles Krebs

While does browse nearby, big buck marks sagebrush with scent glands under ears to identify territory.

Buck pursues doe to prevent her from leaving his territory, which he defends against all potential rivals.

grass, artfully marked with white underparts. The white rump patch flares dramatically in alarm, flashing a signal that is visible for many miles.

But although its evolution parallels that of African gazelles, the pronghorn is only distantly related to the Old World antelope. Technically it is not one of the true "antelopes" because, unlike them, the pronghorn sheds its horns. Its North American lineage has been traced back some 25 million years; its history and fate are intimately entwined with the prairies, deserts and rangelands of the American West. By the Pleistocene, 13 genera of modern pronghorn antelope had roamed the continent, leaving fossil bones from California to the Mississippi River. Only *Antilocapra americana* (literally the "American antelope-goat") survived the Ice Ages. "Survived" is an understatement. Despite Wyoming's fierce winter blizzards and Arizona's bone-dry desert summers, it flourished. Just 130 years ago an estimated 40 to 50 million antelope roamed from western Kansas to California, from southern Saskatchewan to central Mexico.

Like the bison, the pronghorn had a harder time surviving the taming of the West. Millions froze during bad winters made worse by overgrazed or fenced-off winter rangeland. Slaughter by greedy market hunters, hungry homesteaders and starving Indians further reduced populations to scattered remnants of just a few thousand. Belated regulation of hunting, together with preservation of crucial wintering range, has allowed the species to rebound from only 13,000 in the 1920s to its current population of about 750,000.

It has been a remarkable recovery, "the wildlife success story of the century," as one biologist terms it. Yet the pronghorn has regained only two percent of its former numbers, and its range has shrunk considerably. California cotton, Nebraska wheat and Texas corn now grow where the antelope once played. Continued poaching and overgrazing endanger three dwindling Mexican subspecies. Wyoming, with more than half the nation's pronghorn population, contains some of our last islands of open range in an enveloping sea of fenced pasture and irrigated farmland.

The Great Divide Basin, surrounded by the Continental Divide in south-central Wyoming at an elevation of 6,900 feet, is the heart of pronghorn country. Treeless and windswept, the 4,200-square-mile plateau is a harsh but beautiful remnant of the unsettled West. Though it has been crisscrossed by dirt roads and the slow-to-heal wheel ruts of coal and uranium prospectors, it has known neither plow nor fence. "The Basin may be the country's largest chunk of relatively undisturbed rangeland," says Alldredge. One of the nation's last wild bison was shot here in the 1970s, a negative distinction but a good indication of the area's isolation. In place of the exterminated bison, cattle and sheep now graze these public lands on allotments administered by the U.S. Interior Department's Bureau of Land Management (BLM).

Springtime in the Basin is short but spectacular. At the peak of pronghorn fawning in June, after the snowmelt and a month of thunderstorms, the land is a palette of greens: gray-green of the sagebrush stretch-

Steve Yates tracked pronghorn in Wyoming and Montana for this story and is now writing a script for a TV documentary about them.

The best males generally lay claim to the best habitat and during fall rut they are constantly on the run.

Courting buck stands close to doe, his head high and ears erect, before offering cheek patch to sniff.

ing off to the red hills; lime green of rabbit brush; fading green of native grasses—all splashed with bright yellow stonecrop, lavender daisies, reddish flower heads of desert buckwheat and Indian paintbrush, and the bitterroot's open cup of sunset pink. Thousands of horned larks with yellow bibs flit through the brush, singing deliriously. Bands of wild horses, handsome blacks and pintos, graze in the distance and swirl up dust devils as they run. Kestrels and harriers swoop low over the sagebrush, ferruginous hawks and golden eagles soar overhead—all hunting the ubiquitous ground squirrels, which stretch up on their hind legs scanning for hawks, then, with mouths full of thistledown, scurry into holes.

The golden eagles will also take larger prey. Alldredge and a graduate student have witnessed eight separate attacks on pronghorn adults and fawns, half of them successful. In each case, an eagle buzzed an antelope band, then sank its talons into the last of the fleeing creatures. One powerful bird lifted a month-old fawn 15 feet into the air. Another time Alldredge watched in amazement as an eagle rolled head-over-hooves with a fleeing buck four times before finally giving up its hunt in disgust.

A professor of wildlife biology at Colorado State University in Fort Collins, Bill Alldredge, 40, has spent much of the past eight years studying pronghorn in the Basin. The work has not been dull. Tracking his radio-tagged animals, Alldredge has flown in small planes through winter storms and survived forced landings on rutted dirt roads during summer thunderstorms. One winter he almost froze hiking out of the desert in a blizzard after his truck broke down and the

Pronghorn doe displays typically small horns. Females lack the dramatic face bands that distinguish bucks.

radio failed. During a violent electrical storm last summer, the lead from his telemetry antenna was sparking two inches to the gearshift as lightning bolts exploded on the ground around his truck.

Catching a strong, skittish adult pronghorn takes a lot more organization and effort than tagging a fawn. Alldredge and his colleagues from the Wyoming Game and Fish Department and the BLM use a roundup technique first employed by earlier Great Basin peoples. According to anthropologist Oliver La Farge, the Ute Indians south of here—and presumably the Shoshoni, who occupied western Wyoming and hunted the Great Divide Basin—would assemble "once a year for a great drive, when the swift beasts were driven into a brush corral and killed. Then for a short time everyone feasted on red meat."

Alldredge hires a helicopter to drive the pronghorn over a rise and into a hidden corral, which is then closed off by an ad hoc tribe of student volunteers (p. 92). No antelope are killed but Alldredge, who distrusts the effects of tranquilizing and immobilizing drugs, has twice had his own ribs broken while trying to subdue a spooked animal.

Notwithstanding the difficulties, Alldredge has managed to collar 50 or so of the Basin's 10,000 adult pronghorn with his small transmitters. The devices have taught him a great deal about the animals' movements. "We've found that bucks here are highly territorial," he says, "and that both sexes show a strong fidelity to summering areas. Year after year, males occupy the same territories and females give birth near the same spot. Movement to winter ranges appears to be determined by the weather. The animals go only as far as is necessary to find forage."

Alldredge has found that in habitat like the Great Divide Basin more than 90 percent of the pronghorn diet is sagebrush. "It is very high in protein," he says, "but it also has volatile oils, terpenes and benzoic acids that inhibit digestion. We think that pronghorn have the ability to detect which among those plants has the lowest concentration of these substances."

While its mother is away feeding, a fawn instinctively hugs the ground to avoid detection by predators.

Solving some behavioral mysteries

Tagging the fawns of radio-collared does will help Alldredge clear up a number of behavioral mysteries. Do the fawns stay with their mothers as yearlings and adults, for example, or do they disperse? Do they return to their own birth sites to give birth? After weaning, where do the buck fawns go?

"Bill's work has helped us design and place livestock fencing to minimize interference with pronghorn movements," says Dave Moody of the Wyoming Game and Fish Department. "His studies on winter mortality and age structure have helped us improve our predictions of summer-herd populations and adjust our harvest levels." Alldredge's research has also helped prevent potentially harmful coal mining on crucial wintering range and has kept miners sensitive to the pronghorn's needs.

One of Alldredge's studies examined the impact on pronghorn of the Sweetwater Mine, a uranium operation in the central part of the Basin. Another mine—this one located in the Green Mountains, to the north—reportedly had contaminated groundwater with uranium and radioactivity. But the major impact of the Sweetwater Mine, Alldredge found, was not associated with mining per se; it was the increased public access afforded by the web of new prospecting roads. "Once this area was pretty remote and you had to work hard to get here," the biologist says. "Now there is much more disturbance by recreational vehicles, rock collectors and hunters."

Rump patches glaring in the sunlight, curious twins interrupt high-spirited play to check possible trouble.

After a few weeks alone with their mother, the kids will join nursery band and begin competing for status.

Though the antelope rut does not peak in the Great Divide Basin until late September, preparations get under way long before then. Even while the does are fawning, mature bucks are already reclaiming their territories. As we watched one standing guard, he seemed to be aware of every movement within binocular range. All summer he would try to fend other males from his patch of land by intimidation or, if necessary, by actual combat. As fall approached he would begin to intercept passing doe bands and try to hold them on his territory by constant herding. If the land was rich enough in forage to satisfy the does, if he could hold off all challengers and if he was not shot by a hunter, that buck would breed, perhaps many times.

Poorly situated bucks, some of whom are losers of previous years' battles, abandon their worthless claims and join meandering bachelor bands. The bachelors spend the summer competing among themselves, testing their potential, trying to carve out pieces of territory. As the rut approaches they begin to contest territorial bucks, harass stray does and grab any chance for an opportunistic mating.

Prime bucks, with their impressive horns, are eagerly sought out by hunters. In states on the periphery of pronghorn range, the demand for hunting permits greatly exceeds the supply. In Wyoming, where humans barely outnumber antelope, game managers have a hard time keeping pronghorn populations within limits deemed acceptable to local ranchers—what Alldredge calls the "political carrying capacity." Even though the pronghorn exist on a diet of forbs, browse and brush, and compete very little with cattle for grass, they are highly visible animals. "Some ranchers just don't like to see them feeding on their allotments," Alldredge says. "Wheat growers feel that pronghorn lower their yield, though we're hoping that the results of the careful research we've done in eastern Colorado will convince them otherwise."

The problem with pronghorn hunting is that everyone wants a trophy-size buck. These bucks are particularly vulnerable during the rut, Alldredge says, and hunting at that time can disrupt the breeding hierarchy. "Most of the prime bucks in Colorado have been harvested and so now the breeding is being done by untested young males. Under natural selection, the fittest animals make the greatest contribution to the

Pronghorn in the Great Divide Basin are herded into pen where some will be outfitted with transmitters.

gene pool. If you've lost the most fit, you may eventually run into problems." To avoid such problems, Idaho's game department recently changed the pronghorn hunting season. It does not begin now until the rut is over—before the bucks drop their horns but after they've had a chance to breed.

An even greater threat to the antelope may come during what is known as the "winter pinch." "The Basin is excellent summer range," Alldredge says. "The antelope would never leave it if they didn't have to. But in January it's like Siberia. The wind will blow ice particles through your soul." Though the pronghorn's coat of hollow hairs provides effective insulation against the bitter cold, which the windchill factor can lower to 60 degrees below zero, fuel becomes a critical problem. Deep-crusted snow can cut off the animals' food supply.

"Along about November," Alldredge says, "the Great Divide Basin antelope move from their summer range to staging areas a few miles south, where they remain in large herds until the weather gets bad. Then they move as far south as they have to in order to escape the deep snow. According to the journals of early trappers, pronghorn once traveled with the bison herds. The bison swept the snow away as they fed, and the pronghorn would then follow behind, foraging on exposed vegetation. When the bison were wiped out, the antelope had to work much harder to find food."

But pronghorn, which rarely attempt to jump over fences, lost much of their mobility with the spread of barbed wire throughout the West in the late 19th century. Modern woven-wire livestock fences used around pastures and along highways today form even more effective barriers. "During the terrible winter of 1983-84," Alldredge relates, "many of the antelope in the Basin couldn't stay ahead of the storms. They moved south and encountered the Interstate 80 fence and numerous livestock fences. We documented a 60-percent reduction in the population that winter and much of it was related to the fences."

One of the unfortunate animals was "Antelope E," named after the identification letter on a radio collar Alldredge had put on him. "He was an impressive buck and we learned a lot from him," Alldredge recalls. "We watched him defend his territory through two years of ruts. We watched him court and breed females. We followed his migration for two years. During that third winter, we radio-tracked him all the way down to I-80 and along it for a hundred miles and back toward Rawlins. When he quit moving, we found him dead, hung up by his back leg in a fence. He'd tried to jump it in his desperation to get out of the blizzard. We had seen him escape possibly 20 encounters with hunters over the years—and he ends up upside down in a stupid fence in a snowstorm."

Alldredge worries about the continuing spread of stock fences throughout the West's remaining open rangelands. "The cattlemen want to get their BLM allotments fenced, at public expense, so they won't have to hire as many cowboys," he complains.

Several years ago, a rancher in the southern part of the Great Divide Basin put up a 28-mile-long, five-foot-high fence. It enclosed about 20,000 acres of land, public as well as private. Much of that land had earlier been designated critical pronghorn wintering range by the Wyoming Game and Fish Department. Because the fence was made of woven-mesh wire from the ground up, the antelope could not crawl under it, as they can and do if a gap is left at the bottom.

"In that same hard winter of 1983-84, the animals

Hungry antelope died after becoming entangled in a barbed-wire fence while it was foraging for food.

DEWAR'S PROFILE:

KRIS KRINGLE

HOME: The North Pole.

AGE: Ageless.

PROFESSION: President and CEO, World Gift Distribution Network.

HOBBY: "When you only work one day a year, you need a lot of 'em."

LAST BOOK READ: The Book of Lists, David Wallenchinsky, et al.

LATEST ACCOMPLISHMENT: Determining who's been naughty or nice.

WHY I DO WHAT I DO: "There'd be a lot of unhappy people if I didn't."

PROFILE: Jovial, ubiquitous, philanthropic. "He travels fastest who travels alone."

QUOTE: "Merry Christmas to all, and to all a good night."

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started piling up against the rancher's fence," Alldredge relates. "They were unable to cross and get to their critical winter range." The story was picked up by the national media. The Wyoming Wildlife Federation and the National Wildlife Federation sued the rancher to have the fence removed and Alldredge, together with Moody and a representative of the BLM, gave key testimony in that case.

The fence was ruled illegal in 1985 because part of it closed off public lands. That decision is being appealed, but in the meantime eight miles of the fence are down and the antelope can once again get to their winter range. "The judge ruled that Congress had wildlife in mind when it protected access to public lands," Alldredge emphasizes. "What this means is that wild animals have rights, too. They are entitled to come and go and use the public lands, and no one has the right to stop them."

What Alldredge is talking about, of course, is freedom. Pronghorn need it in order to survive; beyond that they seem vividly to symbolize it as they drift across the plains like ghosts of the long-lost American frontier. Bill Alldredge is not an unsophisticated man. As a scientist and a teacher, he knows that his effectiveness depends on his ability to remain objective. But Alldredge is also a country boy—he was brought up on a farm in Colorado—and his attachment to the land and its creatures and the freedom they require runs deep. There are times when his emotions come tumbling to the surface.

We were watching from the truck one day as two does moved into view and called their fawns from hiding. Alldredge had been reflecting on the significance of the fence ruling and now, as he studied the animals in the distance, he spoke about the obligations of stewardship in a way that might have sounded clichéd if he had not been so utterly sincere. "Aldo Leopold, the pioneering ecologist, believed that until we come to grips with our responsibility to the land and its wildlife," he said, "we'll never solve any of our resource problems. We have the great privilege of living on this planet. We have to accept the responsibilities that go with it." I looked at him and, sure enough, there were tears in his eyes.

The three fawns nursed for a while and then proceeded to race and chase each other exuberantly. They seemed to embody all the joys and dangers of living in the open. "God, they're beautiful animals!" Alldredge exclaimed, his eye back on the scope, as the pronghorn hurtled free as the wind across the unfenced land.

Spunky survivors of the Old West barrel across the open spaces of the Great Divide Basin in Wyoming.

GM

MARK OF EXCELLENCE

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EVERY GARAGE SHOULD HAVE

AT LEAST ONE CHEVY.
CHEVROLET
Astro. One of the heartbeats from Chevrolet.

Weakened by the 1985 earthquake in Mexico City, this ten-story apartment house is blasted by the Loizeaux. The family company, Controlled Demolition Inc., was hired to topple 25 unsafe buildings after the quake.

The huge Claude Debussy apartment complex near Paris, loaded with explosives, stands ready to fall.

Moments later the six adjoining 16-story buildings—some 77,000 tons—form a 600-foot-long pile of debris.

By Doug Stewart

These architects in reverse make demolition an art

Using explosives to choreograph the collapse of man-made structures, the Loizeaux boys just help buildings to tear themselves apart

Chris Keegan, in a scuffed white hard hat and tan jumpsuit, puffs on a cigarette while taping blasting caps to the sticks of ammonium nitrate and TNT poking out of the concrete walls around us. I'm wearing a hard hat, too, but his cigarette still makes me uneasy. Chris explains that cigarettes don't set off blasting caps, electricity does. "But I try not to smoke around the local workers," he says. "It makes them nervous."

Keegan is an employee of Controlled Demolition Inc., a tiny family-run Maryland company that's demolished more structures with explosives (5,000 and counting) than any other company in the world. No other outfit even comes close. If Keegan says it's OK to smoke, I'll just have to trust him.

The building he's helping to destroy is the Claude Debussy apartment complex, an enormous concrete eyesore on the outskirts of Paris. Debussy is 16 stories tall and an ungodly 600 feet long. Built in the early 1960s as public housing, its walls are now cracked and pulling away from its floors. The French demolition contractor decided it would make more sense to dump the building onto the ground in eight seconds than to chip at it with wrecking balls for 12 months. Explosive demolition is still fairly new to Europe, and the contractor has wisely called in Controlled Demolition to direct the shot.

"Most people have no concept of what we do," says Keegan's boss, Mark Loizeaux (they pronounce it "la-WAH-zo") during a break from the work. Loizeaux's father, Jack, started the company and Mark, 39, and his younger brother Doug, 36, now run it together. Mark points to the cover of a French magazine featuring a drawing of Debussy being blasted to bits, the bits soaring skyward. "We don't blow buildings up," he says, biting the words off sarcastically. "We blow them down. We drop them." Mark is a confident, hard-driving, sometimes abrasive man who would sound cocky if he were not so serious about his work. "Every nail that was carried up in the pocket of some construction worker," he says, "is potential energy that's at our disposal. God gives us gravity and we just harness it to bring the building back down."

To put Debussy on the ground will require 1,823

Photographs by Peter Menzel

explosive charges weighing a little more than 600 pounds all told. That's a good-size arsenal, Loizeaux concedes, but its total energy is nothing compared to the energy of the building itself. When Debussy tumbles to the ground, 77,000 tons of concrete, steel and plaster—many times the weight of the Eiffel Tower—will almost drop straight down from an average height of 80 feet. The building's own weight will tear it apart, he explains. The explosives are just a catalyst, kicking out a wall here, nudging a column there. Gravity does the rest.

The big advantage of explosive demolition is speed. If a busy street runs past the building, you reroute traffic for a few hours instead of a few months. Neighbors are spared months of jackhammer music. If you know what you're doing, it's safer as well: you don't have armies of wreckers climbing over scaffolding and dodging debris month after month. When you shoot a building with explosives, the nearest person is hundreds of feet away, as far as the detonating wire will stretch. A bonus of using explosives—from the wrecker's point of view—is that historic-preservation groups have less time to seek legal injunctions.

Here in Paris, in any case, no one has stepped forward to win architectural-landmark status for Debussy. It's not only shabbily built but unsightly to boot. One former tenant said it looked like something Dr. Frankenstein would have built.

Now, a few days before the scheduled blast, Debussy's interior is in worse shape than its exterior. A team of French workers have been at it with sledgehammers, drills and small tractors for the past two months, weakening the building from inside on four floors. Elevator rails have been cut. Staircases end in thin air. On the ground floor, the workers have reduced the six lobbies to a long rubble-strewn loft. They've punched out all the nonload-bearing walls and whittled the load-bearing ones to rough-edged panels a few feet wide. I wonder what's holding the ceiling up, not to mention the 15 stories above it.

"Architects have to put up buildings that will withstand the 100-year wind, the 100-year earthquake," Loizeaux explains in an effort to reassure me, "but we don't have to worry about that. We just have to worry about this week's weather forecast."

The average engineer, he says, has a hard time getting used to this idea. He recalls a job in Hartford, Connecticut, a few years ago. The city engineer dropped

Sequence from top shows preparations for demolition of Debussy complex, as Mark Loizeaux (top, second from left) goes over plans and helps wire a stairwell; coworkers tape charges, and Loizeaux rigs detonator.

by for a visit just as the CDI crew finished severing a number of the building's steel columns. "He saw what we were doing," Loizeaux says, "and he ran screaming out of the building into the street, flailing his arms and yelling at cars—'Stop! Stop! Don't drive down this street!' He wanted us thrown in jail." Then Loizeaux finally managed to calm him down by explaining that an empty building with a life expectancy of 48 hours doesn't need the same margin of safety as a building that has to prop up people, refrigerators, waterbeds and occasional roofloads of snow year after year.

By Tuesday morning, the day of the shot, Debussy is empty and the ground floor sealed up with sheets of corrugated iron. I sneak in to have a look around. Yellow blasting-cap wires dangle from elevator shafts and snake around collapsed railings, twisting into each other with loose square knots and quick pinches of black electrical tape. Old wooden doors have been placed around the concrete columns and wrapped with heavy wire to keep chunks of concrete from rocketing out of the building when the charges go off. Tucked into one of these wire loops is a snapshot of a gray-haired gentleman sitting in a café and smiling at the camera. He'll be the first to go.

A VIP tent has been pitched several hundred feet from the condemned building, and by noon the local press is arriving in droves. Six-hundred-fifty *agents de police* are on hand, plus anyone else in the neighborhood who owns a uniform. A building demolition is always a sure way to get one's picture in the paper, and the local mayor has arranged to push the button when the time comes. In the excitement, no one seems to notice that the wires leading from the mayor's photogenic blasting machine lead no farther than a chain-link fence 100 feet away. The operative box sits in an empty lot nearby, presided over by CDI's Project Superintendent, Steve Pettigrew.

At 1:06 P.M., with 60 seconds to go, a pair of police sirens begin to whoop. Thirty seconds later, they whoop again. Over a loudspeaker, a French-accented voice starts counting down in English from 15. At zero, Pettigrew mashes down his box's red "fire" button with his thumb.

There is a quick series of booms, loud but not deafening. The building starts to melt. Slowly at first, Debussy turns into an immense waterfall of concrete, the two ends first, then the middle. In eight seconds, the monolith is gone and a swirling brown dust storm has

Filming his handiwork (from top) Mark Loizeaux sets movie camera in a school yard near the Debussy complex, then catches the first instants of the blast before dust cloud engulfs him. He emerges with smile.

In aftermath of the 1985 earthquake in Mexico City, one of the structures the Loizeaux demolished was this massive Navy Department office. Made of structural steel, it required more specialized charges than usual.

taken its place. A minute later, the dust clears to reveal a neat corridor of debris 30 feet high and barely wider than the original building. Even a few dozen feet from the blast, trees are undamaged, though their branches are draped with wallpaper.

Mark Loizeaux appears from behind the wreckage with his movie camera and tripod, coated in white dust and grinning. The Loizeaux brothers always film their work or pay someone else to. It's not a sentimental hobby. They study footage of their handiwork the way pro-football coaches study game films, looking for mistakes—a column that kicked out too soon, a beam that sagged too late.

A month later when I visit the company's secluded headquarters on an oak-covered hillside outside Baltimore, in Phoenix, Maryland, Mark tells me he's already watched reruns of Debussy's death throes 14 or 15 times and he's not through yet. The job went well, but in Mark's mind there's always room for improvement.

"The idea is to make a building fluid if you can," says Mark's brother, Doug, just back from blasting a series of quake-damaged buildings in Mexico City. Doug is more soft-spoken, more easygoing than Mark, but just as well versed in CDI's form of architecture in reverse. "When you watch someone else shoot a building, it'll stop, stop again and then sort of lay over," he says. "When you watch one of our buildings collapse, there's an initial movement, then it just seems to dissolve." The building, in effect, pours itself onto the ground, rather than dropping with a thud.

The key to the Loizeaux 's smooth touch is the timing of the hundreds of individual explosions they set off. When the button is pushed, the fuses, or "delays," inside the blasting caps all start burning at once, but some burn longer than others before detonating the cap. At Debussy, an enormous complex, Mark had to use 16 different delays spread over seven seconds. By choreographing the delays just right, the Loizeaux firm can make a structure tip over like a tree or fold up like the flaps of a cardboard carton.

When it comes to the art of controlling buildings in motion, the only teacher is experience, and the Loizeaux family has a decisive edge there. Of all the structures brought down with explosives worldwide where a degree of expertise is called for (a grain silo in the middle of a field doesn't count), CDI probably handles four out of five, grossing close to $3 million a year in the process. "We get phone calls from people all over the world who want to come and study our methods," says Mark. He tells them, in essence, to drop dead.

Mark himself studied architectural engineering

Doug Stewart is a frequent SMITHSONIAN *contributor whose last article was about the inventors who pursue perpetual motion, in the November 1986 issue.*

With the building down, Mexican workers examined debris to plan removal operations. Three and one-half weeks later, the site was cleared and paved with a red volcanic stone as "Peace and Solidarity Park."

with a view toward knowing the enemy. Doug has a degree in communications. But even the engineers among CDI's full-time staff of ten defer to the brothers when it's time to design a blast.

Their view of buildings as targets can be disconcerting to an outsider. At the CDI office Mark tells me in detail how he could demolish a major Manhattan bank's headquarters building with a battery-powered drill and a knapsack load of liquid explosive. Small wonder that the Pentagon and the State Department have been calling on the Loizeaux brothers to help them with antiterrorist measures. ("We have fun," says Mark. "We sit around a table and play war games. I play the terrorist.")

The office decor around us is as unsettling as our conversational topics. On nearly every wall hang poster-size photographs of structures in extremis: bridges, smokestacks, office buildings, warehouses, parking garages, hotels—every one of them tilting fatally. Carolyn Bengal, the firm's receptionist, says that when she's having a bad day, she can't bear to look up.

Among the thousands of structures the family has destroyed over the past 30 years, the Paris job doesn't rank as a particularly tricky one. There was plenty of room and the structure, though enormous, didn't need much coaxing to fall. Steel buildings, on the other hand, demand more strenuous measures before they'll topple in an organized way.

At 5 A.M. on a Sunday two months after the Paris job, I find myself standing outside such a building in Bridgeport, Connecticut. The Connecticut National Bank building, 11 stories of steel, brick and granite, is the second-tallest building in Bridgeport, but it's in the wrong place. A $75-million office complex is planned for the block. An hour and a half from now, CDI will regale a crowd of 2,000 early risers by laying it on the ground in five and a half seconds.

It will be a tight squeeze, and both Doug and Mark are on hand to stage manage. Other buildings sit directly across the street on two sides, well within shrapnel range. Plywood panels shield their lower floors, and several tons of sand cover the sidewalks to protect underground electrical vaults. Thick steel cables wrap the outer edges of two of the doomed building's upper floors to help prevent wayward columns from snapping out like one-ton bullets once the destruction begins. From a distance, the bank reminds me of the Doges' Palace in Venice: a heavy cube of masonry floating on a sea of delicate columns. Most of the bank looks intact, but on the ground floor only steel columns remain, their brick casings chiseled away.

I follow Mark inside as he tests the wiring one last time. "The delays are going to start over in this corner," he says, pointing to the rear of the building as we duck wires. "That section is going to drop, then hesitate, and then this center section is going to move."

In preparation for a blast, orange charges and green detonating cords lean on marked pillar, unconnected.

Everywhere around us, columns have been nearly cut through by torches. The explosives, called linear-shaped charges, are attached like bracelets to the tops and bottoms of most of the columns. To help the floors "pirouette," as Mark says, different columns will have different lengths of steel blown out. Cutting steel takes a lot more oomph than shattering concrete does, and for this job CDI is using an explosive called HMX. Pound for pound, it's one of the most powerful explosives this side of an atom bomb. The shaped charge will cut steel as cleanly as a razor through Jell-O.

By 6:44 A.M., traffic on Interstate 95, 400 feet away, has been halted. The police chase video-toting sightseers behind sawhorses, and the countdown begins. At 6:45, 12 tremendous explosions rip through the building at half-second intervals. The rear caves in, the center sags and crashes, and the facade leans back and topples. The building vanishes.

When the dust clears five minutes later, the bank is a wonderfully tidy pile of rubble 20 feet high. A few long, twisted girders poke up out of the mound like wilted flower stalks. A massive capital from one of the bank's four polished granite columns has rolled across the street and chipped a ten-inch nick from the facing bank's facade. That and two shattered windows are the day's only casualties.

Doug, Mark and a small crew of local wreckers repair to a room in a small adjoining building that's slated for demolition later. The room's walls now have huge fissures and most of the ceiling is on the floor. One of the locals produces a shopping bag filled with ice-cold beer, although it's still just after dawn on Sunday, and everyone congratulates everyone else.

"One problem we have is that what we do looks easy," says Doug. "People think you just walk in and throw a few cases of dynamite around and blast the building." Often, he says, to make sure the building drops, inexperienced blasters will err on the side of overkill. "We call that 'launching' a structure," says Doug. Adds Mark, "They'll throw debris a quarter of a mile. It's insane."

Mark recalls a rival firm's fiasco in Kansas City in the 1970s. "The building wouldn't drop, so they kept putting more and more explosives in it. They'd broken all the windows for two blocks around. Finally, on the fourth try, the building came down, but it fell the wrong way, hit a building across the street and punctured a water main."

Not that CDI hasn't had its share of mistakes. Mark once had to scramble up a wavering radio tower to set a new charge before a gust of wind finished it off. His father, Jack, rode a steel-trestle bridge down into a river in Alabama; the bridge had finally decided to drop after Jack had climbed out to set a second charge. "And I remember watching Dad shoot an eight-story building when I was ten," Mark says, with obvious amusement. "He turned it into a seven-story building."

That particular job, in 1957, was the first building Jack Loizeaux ever blasted, an apartment house in Washington, D.C., where the State Department now stands. Jack had blasted house foundations and smokestacks, but nothing on this scale. The building didn't drop all the way until the third try. He learned from his mistakes, though—in this case, don't dynamite the basement and ignore the rest—and 15 years later *Engineering News-Record* put him on the cover as the man who "pioneered the use of explosives to demolish just about everything built by man. . . ."

The county wanted something more zesty

Jack Loizeaux, 71, is retired today, though he still keeps his hand in by dropping a building now and then. I caught up with him in West Palm Beach, Florida, where he was blasting an old airplane hangar to clear the way for a new airport.

"That was a real dog-and-pony show," he tells me after the shot. Nearby, county workers are dismantling a bandstand and removing a forest of rented palm trees. Jack explains that having a tractor yank the hangar over with a cable would have been easier and several times cheaper. Palm Beach County, however, wanted to kick off its new airport construction with something more zesty, more "page one."

Jack Loizeaux doesn't particularly care for the show-biz side of explosive demolition. He's made a career of bringing down buildings with as little fuss as possible. He considers himself an engineer, albeit a

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self-taught one. With his neatly brushed gray beard and thoughtful demeanor, he calls to mind a college lecturer rather than a building wrecker.

Jack and his wife, Freddie, also a licensed blaster, are living in a new postretirement motor home while in the area. When we walk back after the blast, Freddie pops a promotional video into the vehicle's VCR. We watch building after building succumb to gravity with musical accompaniment. "Watch this one," Jack tells me as six gigantic smokestacks topple in slow motion. The finale, set to a trumpet fanfare, is a quick sequence of toppling hotels, smokestacks and bridges, each blast timed to the soundtrack. A few of the local wreckers have dropped by and we all hoot in appreciation. Jack has seen the tape a thousand times and he still loves it.

"I used to get pretty tense in the old days," he admits, "but we've learned a lot." Jack and the boys sometimes consumed a box of Rolaids the morning of a shot. The biggest building the Loizeaux—or probably anyone else—ever shot was the Traymore Hotel in Atlantic City, New Jersey, in 1972. The tallest was a spectacular 32-story high rise they telescoped in downtown São Paulo, Brazil. (They rarely take on buildings less than seven stories; a low structure doesn't fall far enough to break itself up.) The smallest job they've done was blasting cement out of a cement truck.

Jack refers to what CDI does as precision blasting, and it's clearly precison, not firepower, that interests him. In 1961, he made a stir in the blasting world by dynamiting 300 feet of curbing in six hours without damaging the pavement alongside; a jackhammer crew had given up after slogging away for three days along just 50 feet. Since then, he's blasted bank vaults (with permission) and even, ever so carefully, radioactive walls within atomic reactors.

Jack Loizeaux's first targets in the demolition business were smaller yet. Trained as a forester, he ran a tree service near Baltimore in the late 1940s and he began to use dynamite to remove tree stumps left behind by the Dutch elm epidemic. From tree stumps, he branched out to rock, then smokestacks, then buildings. He became an expert on explosives while studying engineering at night. Whenever he had room, he experimented. By 1960, he'd closed the tree service and opened a new company, Controlled Demolition Inc., precision blasters.

Mark and Doug were already tagging along, learning the family trade. Mark dropped his first smokestack when he was eight, laying out the drill patterns and supervising the shot. In 1967, when Jack was badly hurt in a car accident, Mark, at 19, became the youngest licensed blaster in the United States, bypassing the usual age limit by two years so he could run the family business. Doug followed in his footsteps a few years later.

Jack and Freddie talk of their sons with obvious pride. As a family, the Loizeaux are close-knit and openly affectionate. A disagreement over tactics is often prefaced by, "I love you, but. . . ." That closeness, more than a fascination with explosives, probably explains why the boys never considered a different line of work. Still, beneath the seriousness, beneath the talk of good fragmentation and differential velocity control, there undoubtedly lurks in all of them a childish joy in seeing a building crumble. It seems closest to the surface in Doug, who when he was a teenager, made a point of breaking each and every window in a building before a shot.

Perhaps it's in the genes, this destructive bent. While good architects can conjure up a detailed mental image of a building going up, the Loizeaux visualize buildings coming down, in slow motion and 3-D. They do it all the time, out of sheer habit. Driving through the rolling farmland north of CDI's office one day, Mark and I had passed a huge radio tower perched on a hilltop and I asked if his mind immediately set to work planning how to drop it. "Oh, I already know how to drop it," Mark said, barely glancing over. "My son, Jason, could tell you how to drop it." Jason is four and a half and keeps posters of collapsing smokestacks in his bedroom. "We've talked about it. He said, 'Hey, Dad, if we put shaped charges on those cables, that would go over, wouldn't it?' " Mark smiled proudly, just as his father had in telling stories about his own boys. In the mind's eye of a Loizeaux, it seems, nothing is safe.

The Loizeaux boys, Mark (left) and Doug, enjoy quiet moment in Mark's yard before their next big blast.

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Spray painting with atoms.

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The right choice.

P8
Q24

By Don Lessem

From bugs to boas, Dan Janzen bags the rich coast's life

Nothing seems too disagreeable or distasteful to tropical ecology's dean as he explores Costa Rica's dry forest to understand how it ticks

A two-inch-long, thickly furred caterpillar, captured moments before in the Costa Rican rain forest, is squirming across Dan Janzen's hand under the uneasy gaze of 20 biology students. "Many caterpillars of saturniid moths have spines that are highly irritating to predators," he explains before popping the creature into his mouth. "But this butterfly caterpillar is a harmless mimic."

Such are the parlor tricks of University of Pennsylvania professor Daniel H. Janzen, perhaps tropical biology's leading educator and theorist, and likely its most eccentric and energetic character. Here on the forested slopes of a volcano overlooking the Nicaraguan border or back on campus, these University of Pennsylvania students can expect many more dramatic displays from their instructor.

In the pursuit of a lecture point, Janzen has been known to leap onto tables or climb trees, and in his insatiable quest for information on tropical species he has pulled a seven-pound baby deer from the stomach of a six-pound, five-foot-long boa constrictor, weighed both, then stuffed the deer back in the boa like dirty laundry into a duffel bag (p. 114). More uncomfortable was the warble-fly larva he allowed to burrow into and grow up in his leg (their eggs are carried on the bellies of tropical mosquitoes, and the larvae hatch onto the skin of a human or a cow) to better understand its behavior.

It's all in a day's and a life's work for the 47-year-old, 20-year researcher in Costa Rica and the man called the "dean of tropical biologists" by the likes of both Pulitzer Prize-winning Harvard biologist Edward O. Wilson (*On Human Nature*) and best-selling author and Stanford biologist Paul Ehrlich (*The Population Bomb*). Standing in a cattle truck headed down the mountain, shouting out landmarks to his companions, his thinning hair flying, Janzen looks less an academic than a prophet. Indeed, his flowing beard and fierce gaze suggest John Brown at Harpers Ferry.

Janzen's attire suggests neither prophet nor professor, but garage mechanic. In the forest, as in the halls of academe, his daily garb is muddy boots, dark work shirt and pants, key chain and snake bag dangling from the belt. At Penn's biology laboratories he is frequently mistaken for a janitor. When buying a suit and borrowing a tie in 1984, to accept the Crafoord Prize, biology's Nobel, from the Royal Swedish Academy of Sciences, Janzen did not own either.

Nor does he favor the cozy, donnish home life during the six months of every year spent at Penn. He doesn't even have a home there. Rather, he'll curl up on a cot in his crowded lab, sandwiched between the display cases and the bags of moth cocoons.

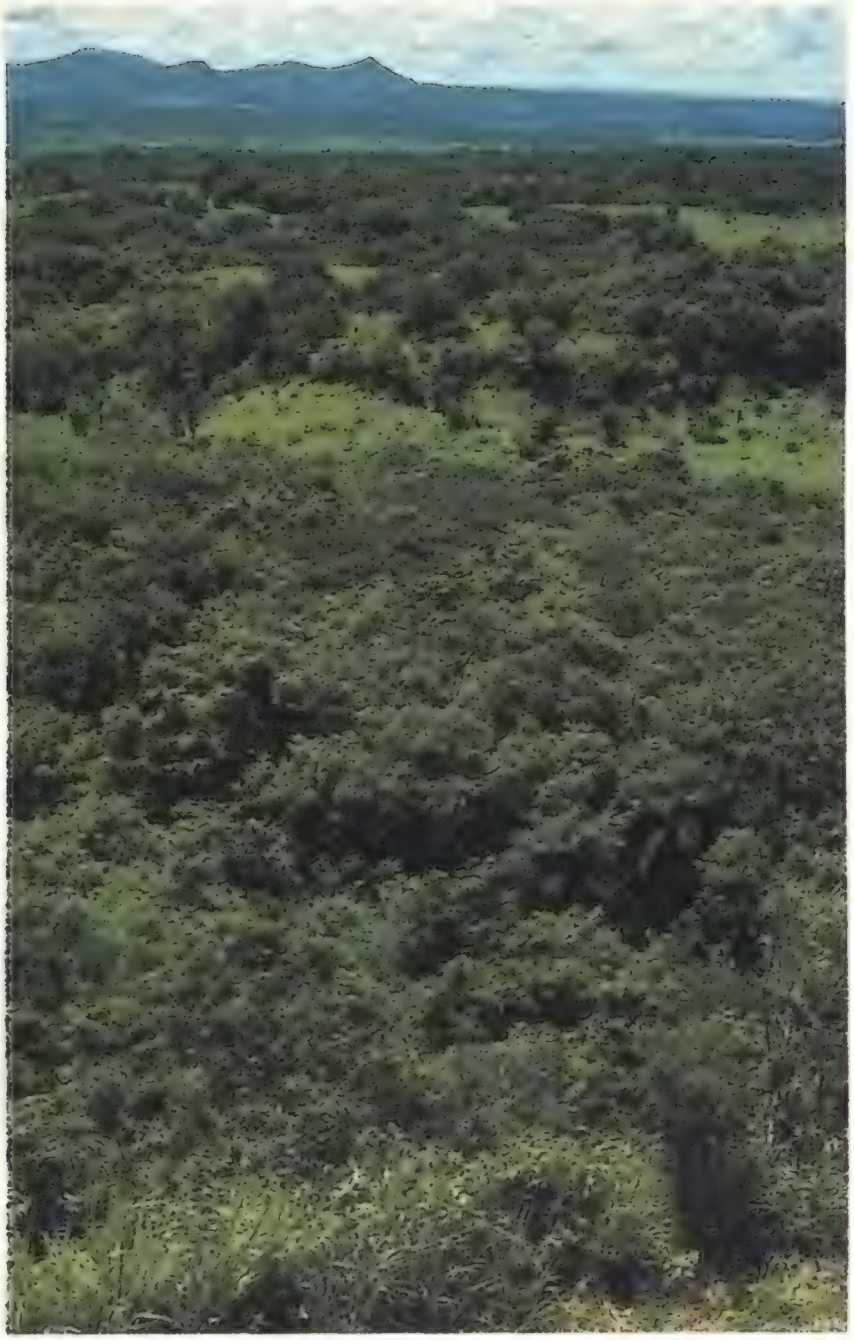
At home with Winnie, Squintle and two computers

Janzen's chief residence for the past 14 years has been a small, rented, tin-roofed cabin in Santa Rosa National Park on Costa Rica's Pacific coast. These quarters he now shares with his companion of seven years, Winnie Hallwachs (p. 118); two Macintosh personal computers; a pet paca, Squintle (from the dog-size rodent's Aztec Indian name, *tepiscuintle*); and even more bags of moth larvae and pupae (opposite).

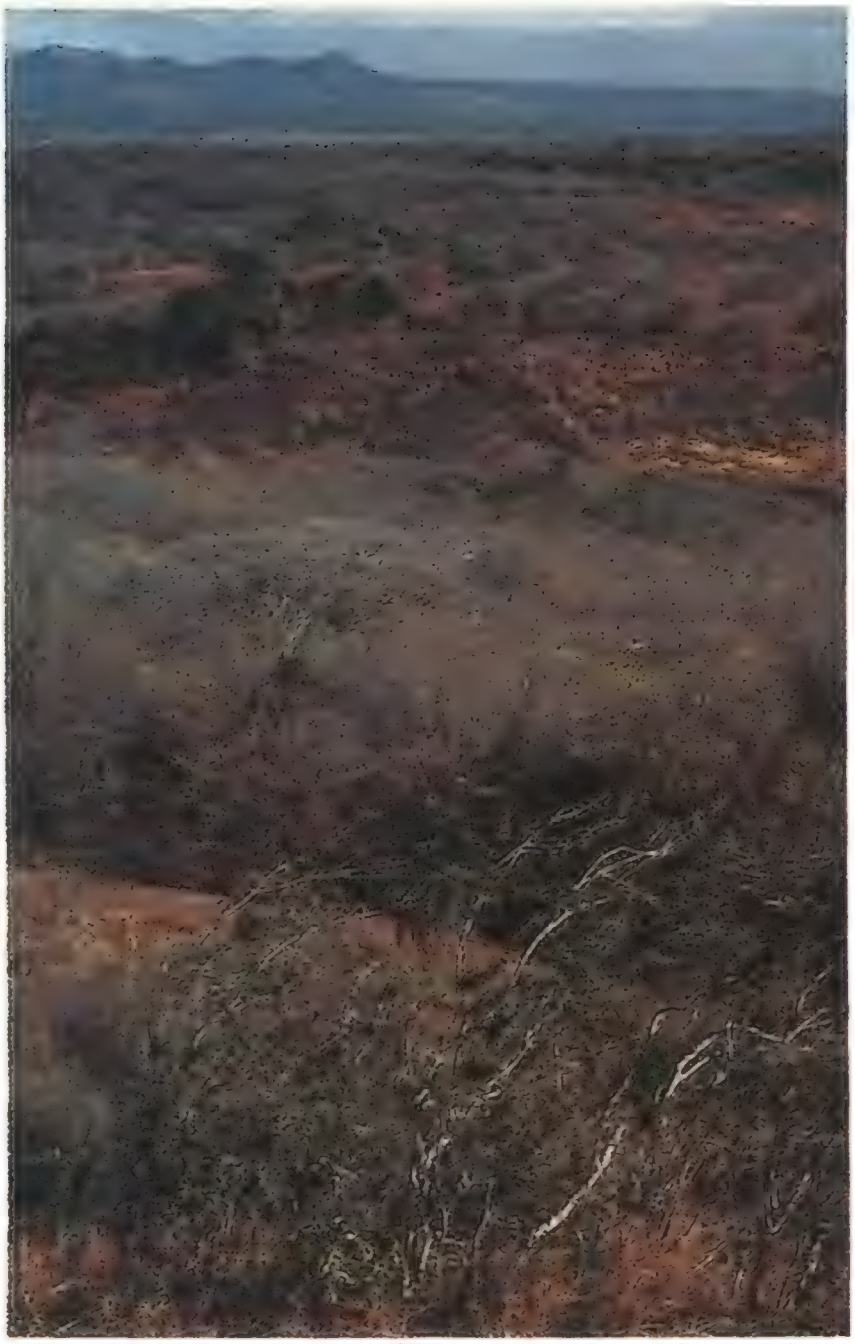
A Ben Franklin quote on the cabin door proclaims, "The idle are not only useless but pernicious members of society." Sloth has never been one of Janzen's vices. Here he's up at dawn and out in the field, and in Santa Rosa the field is often just that. Though tropical biology is largely concerned with the unparalleled riches of the dark and verdant rain forests, his domain looks more like an African savanna or Missouri woodlot. Nevertheless, this small and mostly dry patch of partly deforested pastureland contains the largest parcel of tropical dry forest (as its deciduous, seasonally wet woodlands are known) in western Central America. And Janzen's goal is, as he simply puts it, "to understand how this forest works."

To understand the challenge that statement represents, consider that Janzen counts on his 39-square-

In cabin at Santa Rosa, Janzen weighs live mice from numbered traps for study of rodent's demography.



During rainy season in Santa Rosa National Park, tropical forest is lushly foliated, as one expects.



Same view, taken in dry season, shows why dry forest was so named. Patches above center are fire scars.

mile backyard at Santa Rosa 3,140 species of caterpillars, 170 species of resident land birds, 115 mammal species, 100 reptile and amphibian species—as many of each group as are found in the eastern United States. Spectacular wildlife is all around; brilliant parrots, jaguars, peccaries and, in fall, a beach so packed on some nights with egg-laying marine turtles that he could walk for miles across the strand on their backs.

Yet Santa Rosa is somewhat faunally impoverished compared to the 40 percent more-species-rich lowland rain forests of Costa Rica and elsewhere in the tropics, a thin and narrowing green belt across the Earth's middle that holds more than half of its species. "The complexity of New York City is to a square mile of lowland tropical forest as a mouse's squeak is to all music that has ever been produced by humanity," Janzen has written.

In his desire to understand that score, he attends every mouse's squeak. Few tasks are too dangerous, boa-battling included, and none too tedious or distasteful in his quest to understand predator-prey relationships. So when he comes across a large and highly toxic toad, *Bufo marinus*, on his fast and frequent walks through Santa Rosa, he'll rapidly make it disgorge its lunch and then he'll examine the contents. On encountering mouse, coyote or horse scat, regardless of what he's doing or with whom, he'll pause to search for evidence of prey consumed or seed dispersed.

His colleague Hallwachs (a Cornell University biology graduate student) shows equal enterprise with her favorite subject, a rabbit-size rodent, the agouti. She has put bobbins of thread inside hollowed hard fruits and followed the thread trail to map agouti cache sites.

More like the naturalists of the past century than the scientists of this, Janzen and Hallwachs seek to catalog. But classifying tropical fauna is a far more daunting task than temperate-zone systematics. Just what they are up against and after in their personal inventory of the tropics can be glimpsed from one of their study projects: the census of all the moth species of Cos-

Don Lessem, a Harvard, Massachusetts, free-lance writer, followed Daniel Janzen for two weeks and says that he has never gone with so little sleep.

ta Rica. For eight years, Janzen, Hallwachs and Costa Rican assistants have been collecting moths monthly from 24 sites across the country. Several moonless nights a month they set out lights against sheets to attract male moths (p. 115). So far they have captured, dried and pinned (Janzen uses almost every spare moment, including seminars of colleagues, to do the last) 250,000 individual moths and are putting thousands of specimens in the Smithsonian's Museum of Natural History and other national collections. When will the census be complete? "In about 30 years, or just about when I die," Janzen predicts, "if we're lucky."

Why bother? "It isn't just for the personal satisfaction I take in knowing you can do this sort of inventory in the tropics," he says. "Caterpillars are the major consumers of tropical-forest plants. You can't identify caterpillars without knowing moths, and you can't make any sense out of all the moth observations scientists make in the tropics without classifying them."

Yet collecting observations regardless of subject is his stock-in-trade. "Most biologists develop a hypothesis and then use nature to test it. I get my theories and my results from walking through nature. What I see are interactions beyond imagination, complex ideas and interactions one couldn't dream up."

Stumbling upon an intimate relationship

The ant and the acacia are a case in point. Janzen noticed that the ants occupied the trees, but made no sense of it until he accidentally removed an ant colony that lived in an acacia's thorns and serendipitously encountered the hapless tree weeks later, with its leaves eaten off by insects. Then he found that an English mining engineer, Thomas Belt, had seen and concluded the same thing in Nicaragua in the mid-19th century. Both men were taken by the sugar-producing nectaries on the acacia leaves, the large inflated thorns that the ants had converted to dwellings (right) and the protein-rich food bodies on the leaflet tips.

Janzen observed that species of ant-harboring acacias suffered far less leaf damage from other predators than did naturally ant-free acacia species. In an elegant series of experiments in Mexico and Santa Rosa he showed that ants repelled insects and encroaching plants on the acacias in which they lived. He theorized, in an influential 1966 paper, that this relationship was an example of "co-evolution." He explains, "One organism has changed in response to another, which in turn has changed in response to the first." The ants can't live without the acacias, nor the acacias without their ants. Such one-on-one examples of evolutionary adaptation are most conspicuous in the tropics but some are close to home, such as the cow's rumen full of protozoans that do most of the digesting for her.

Seedlings of the guanacaste, Costa Rica's national tree, sprout from cow dung, may grow to 80 feet.

Acacia ants live in hollow thorns, get sugar from leafstalk swellings, and fiercely protect their tree.

For data on snake diets, Janzen pulled fawn from boa's stomach, weighed both, then stuffed it back in.

Newly emerged silk moth, *Rothschildia erycina*, hangs from cocoon and spreads three-inch wings to dry.

Janzen's discovery was at the roots of a host of new theoretical inquiries into the workings of evolution.

The importance of the ant-acacia study was noted in the wording of the Crafoord Prize for "imaginative and stimulating studies on co-evolution which have inspired many researchers to continued work in this field." Janzen, however, in typically blunt terms, says his contribution is "highly overrated. I didn't discover the ant-acacia relationship, Belt did. And co-evolution is of no large significance. It is just a human way of relating to evolution—animals protect plants like we protect domestic animals. I don't think I have much to offer theoretical evolutionary biology." To him "all the ant-acacia story does is allow one to see what happens to plants that don't have chemical defenses. Ants are analogous to the tannins in oak trees but you can't take those away and see what happens to the oak."

"Poking my way through complex interactions, telling stories and reporting natural history are what interest me," says Janzen. And the "story" of ants and acacias is but one of hundreds in his repertory. His tales have been reported in some 250 scientific writings ranging from perhaps the shortest paper in the history of science (a whimsical "Yes? No" in the journal *Biotropica*) to one of the most thorough collections (he was editor and chief contributor among 174 authors in the 816-page *Costa Rican Natural History*). He writes nature stories as he tells them, in an uncommonly lively style, quoting Pogo on the chief enemy of rainforest survival ("He is us") and providing an evolutionary answer to Pooh's question on herbivory ("Why do all the good things which an animal likes have the wrong sort of swallow or too many spikes?"). "Herbivores selected the plants to be that way," he writes.

The questions, large and small but never obvious, that Janzen asks himself while looking at the forest become the subjects and titles of his papers. "Why Don't Ants Visit Flowers?"—perhaps because the flowers produce nectar with substances noxious to ants, he postulated. "How Accurate Was the Carat?"—he weighed hundreds of carob seeds, the original basis for the 200-milligram measure, and found that only 78 percent were carat weight. "Why Tropical Trees Have Rotten Cores" may have to do with the hollow boles

Males such as this one live six days, do not eat and spend mornings looking for mates, afternoons resting.

Night light draws some of Santa Rosa's 2,800 moth species to sheet. Janzen then collects and catalogs them.

attracting animals that defecate nutrients. The answer to "Why Food Rots" is that microbes have evolved to work quickly and unpleasantly to beat animal competitors to the prized food source.

Though he's researched in the rain forests of Cameroon, Malaya, Uganda, Mexico and Australia, most of Janzen's papers begin with observations he makes at Santa Rosa, though they can end very far afield. One of the most far-ranging of his hypotheses was that giant and now extinct mammals of the Pleistocene age and earlier were, by their fruit-eating and seed-distributing habits, responsible for much of the past structure of American tropical forests. The relative scarcity today of the large-fruited trees beloved by bygone behemoths is directly related to the animals' extinction 10,000 years ago. He came to this sweeping conclusion while poking through the dung of a large mammal, the horse, and finding seeds of tropical tree fruits eaten many miles and months earlier.

This "Pleistocene megafauna" story, like many of his other published notions, has met with some opposition from colleagues. While once viewed as simply tossing off his ideas, Janzen is now seen as one who backs up his theories with abundant field data. "Some of his early stuff may have been half-baked," says an admiring E. O. Wilson, "but a lot of the criticism now may arise from professional jealousy over how much he publishes." To a former pupil, World Bank Senior Environmental Affairs Officer Robert Goodland, he is a theoretical Johnny Appleseed, "planting more ideas than a hundred other biologists. Some of them don't take, but most of them do."

Janzen's greatest contributions to tropical biology may be the scientists he has advanced. In his first year in Costa Rica, 1965, he designed *the* course in tropical biology, an eight-week field approach administered by a consortium of 40 U.S. and Costa Rican institutions, the Organization for Tropical Studies (*Phenomena*, July 1986). Though Janzen gave up teaching the course nearly 15 years ago, it is still taught as it was designed—students meeting and learning from experts in the wild. Most American tropical ecologists have taken the OTS course and hundreds have come to share his passion for studying the tropics.

Dan Janzen's complex tropical world

He has continued to spread his message personally, as a prize-winning lecturer at the University of Michigan and now at Penn. His field courses at Santa Rosa attract not only graduate and undergraduate students from the university but scholars from Scandinavia as well. But educating college students is now of lesser importance than reaching a younger audience—Costa Rican schoolchildren. The nation is among the world leaders in conservation (more than ten percent of Costa Rican land is protected in national parks; the United States' figure is but one percent), and he credits "biology courses taught 20 years ago in Costa Rican schools with influencing the nation's leaders of today." To further that influence, Janzen and OTS have arranged to reprint *Costa Rican Natural History* in Spanish at such a low cost that the country's schoolchildren can have their own copies.

Guanacaste fruit, next to six-inch ruler, depend on large mammals such as horses and cows for dispersal.

Janzen himself received no early formal training in biology. He did, however, acquire a knowledge of hunting and a concern for natural resources from his father and namesake, a former director of the U.S. Fish and Wildlife Service. A somewhat solitary child, young Dan began collecting moths at the age of nine, and did so with such devotion that he made a butterfly-collecting trip to Mexico, his first taste of tropical biology, at 15. As a University of Minnesota undergraduate he supported himself, his then wife and young child by scholarships and hunting and trapping. "I caught all the meat we ate in the last two years," he recalls. He has lost his taste for hunting, if not for collecting insects. But he might never have considered doing the latter professionally had he not strolled inadvertently into a University of Minnesota zoology hall containing mounted birds. From this it was only a step to thinking about his own collection. "Until then," he says, "I was an engineering major. It hadn't occurred to me that you could make a living studying insects." He needed a U-Haul to transport his insect collection to Berkeley when he enrolled at the University of California as a graduate student in entomology.

It was geographic love at first sight

While pursuing his graduate-thesis work, Janzen was invited to a biology course in Costa Rica that was supported by the National Science Foundation. It was a case of geographic love at first sight. "Costa Rica had four times the tropical forest then that it has today," he comments. "It was fantastic, as if what had existed in Mexico 6,000 years ago had survived intact."

The continued survival of large portions of that wilderness is his number-one concern. A trusted advisor to the Costa Rican government ("He is one of our national resources," says former National Parks director Alvaro Ugalde), Janzen recently surveyed ecological damage to one large and remote park caused by illegal gold mining. His recommendation—eviction of hundreds of miners *after* a major public-education program—was enacted in an unprecedented governmental action last winter.

As "probably one of the best articulators we have of the value of tropical conservation" (according to Thomas Lovejoy, World Wildlife Fund-U.S. Executive Vice President), the message Janzen brings Costa Rican officials is the same one he gives his students and readers worldwide: "If we let the tropics go under we will have committed the greatest criminal act that life on Earth ever could or will sustain." In support of his cause, he often metaphorically turns to the kitchen. "Corn, cows, eggs, orange juice, sugar, coffee (the list

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goes on)—80 percent of what we eat in a week is of tropical origin. And so are we." Yet, in as little as 30 years —or about the time we will lose Dan Janzen, by his reckoning—"we will have destroyed all of the tropical forests that produced these resources, except for what little is preserved in small parks."

Janzen doesn't believe he can "fight the battle against avarice, ignorance and population growth alone" to save the tropical forests, but he is fighting a one-man war to save one corner of that wilderness. Last year he began lobbying among governments and conservation groups in the United States for an $11 million expansion of Santa Rosa National Park. So far he has raised $1 million, but has to make another $5 million by next May. The new 270-square-mile refuge will be named Guanacaste National Park, after the large-fruited national tree (p. 116) and the province in which the land sits. Linking Santa Rosa and neighboring dry forest with the patches of rain forest on nearby volcanic slopes that serve as seasonal refuges for dry-forest insects, mammals and birds would preserve the vitality of the only dry forest in Central America large enough to be adequate for the native plants and animals, and still be "user friendly" to humans.

But beyond preserving the forest that remains, he has in mind to rebuild the forest that has been destroyed. Following methods he has pioneered at Santa Rosa, burning fire lanes around fields to prevent accidental fires from spreading and killing young trees (some planted by Janzen and assistants, others seeded by wild animals), he would reforest Guanacaste National Park. "In 20 years we can make a pasture into closed-canopy low forest. In 200 years we can make a forest that looks like the original, and in 1,000 years we will have a forest that is the original, for all practical purposes."

With practical purpose, Janzen has attacked the Guanacaste project half-time, "eight to ten hours a day, every day." He has donated half of the $100,000 Crafoord Prize to the Guanacaste National Park endowment, and has spent the remainder to electrify Santa Rosa to provide better working conditions for its users. Much of his time in the United States is now spent soliciting support from conservation agencies (the International Program of the Nature Conservancy is administering his appeal) and bringing his case directly to the public via a traveling slide lecture in which he discusses its title statement, "How to Build a National Park."

When Janzen inaugurated the Guanacaste project with a talk at the Smithsonian's National Zoological Park auditorium last February, a packed house heard Zoo director Michael H. Robinson, himself a tropical biologist, introduce Janzen as "one of the great theoretical and field biologists of this century and a man deeply concerned with the fate of the tropics." Few among his many former students in the audience would have taken exception to Robinson's remarks nor to the possibility that he will raise $11 million to save the dry forest. They knew at a glance just how important saving this corner of the tropical forest is to Dan Janzen. He was wearing a suit and tie.

Winnie Hallwachs returns from forest with pails of leaves for caterpillars in moth-inventory project.

Using large tree as a vantage point, Janzen braces to photograph experimental forest-restoration plot.

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Ornate turn-of-the-century stein symbolizes a culture against which German artists were soon to rebel.

By Benjamin Forgey

Berlin, 1900-1933: a buzzing center for art and design

No great city was more complex—a tangle of politics, agitation and art—than Berlin in the early years of the century

No other urban center of our time calls to American minds such diverse, ambiguous or contradictory associations as does Berlin—the divided city, the tangible evidence of failed hopes and policies, the isolated symbol of democracy, the locale of stirring memories (the blockade, the airlift, the Wall, "*Ich bin ein Berliner*"). Berlin was our enemy in two world wars: in one it was the capital of a blustering, blundering monarchy, in the other a living symbol of an evil tyranny.

In between the wars there was another Berlin, vibrant though perhaps hard to see through veils of cinematic decadence (*Cabaret*), or of theatrical pathos (*I Am a Camera*), or of scathing caricature (George Grosz). This is Berlin the great metropolis, the stimulating center of creativity, a city of a thousand shimmering hopes and achievements—the "irresistible" city, as the distinguished historian Peter Gay called it. "To go to Berlin," he wrote, "was the aspiration of the composer, the journalist, the actor; with its superb orchestras, its hundred and twenty newspapers, its forty theaters, Berlin was the place for the ambitious, the energetic, the talented. Wherever they started, it was in Berlin that they became, and Berlin that made them, famous. . . ."

Gay was describing the magnetic allure of Berlin in the 1920s, the fateful years of the Weimar Republic. Weimar, the city of Goethe, was the provincial capital where a new, democratic government was formed after the war, but Berlin remained an economic powerhouse and was the chief cultural center of the Repub-

Visionary landscape, *Cosmic Building*, was the work of Karl Krayl, who was associated with idealistic group of architects, the Glass Chain. They sought a bright future for war-scarred and defeated Germany.

Designed by Peter Behrens in 1908, AEG Turbine Factory still stands, an architectural icon.

World of buildings to come was presaged by Mies van der Rohe's 1921 model for a glass skyscraper.

lic. And though its time of triumphant cosmopolitanism was shadowed and relatively brief, this was not something that simply happened overnight, with the defeat in World War I and the collapse of the German Empire. "The Berlin Renaissance," recalled the composer Edgar Varèse, "was a process that began fifteen years before the First World War. When I got there in 1908 it was already a golden age. It was a coming together of the best brains and the most creative artists in Europe."

"Berlin 1900-1933: Architecture and Design" is an exhibition that opened in November at the Cooper-Hewitt Museum in New York, on the tenth anniversary of its installation in the rehabilitated Andrew Carnegie Mansion on upper Fifth Avenue as the Smithsonian's National Museum of Design. The purpose of the ambitious undertaking, organized for the Cooper-Hewitt by West German scholar Prof. Tilmann Buddensieg, is to trace, within the limits of the museum's mandate, the Berlin Renaissance from its beginnings to its tragic demise.

Berlin is not Rome, not London, not Paris—not, in other words, a city whose age and power and magnetism are placed firmly in our mental map of Western culture. The city began as an insignificant trading settlement in the plains of the Mark of Brandenburg between the Elbe and the Oder rivers; its gradual rise was directly tied to that of the Hohenzollern dynasty and the state, later kingdom, of Prussia. But its ascent to the status of a world capital after the unification of Germany in 1871 was meteoric, and its fall even swifter. Ironically, the brevity of Berlin's place in the cultural sun explains much of its attraction as the subject of a major museum exhibition.

Rebels vs. beer-stein culture

There are more than 300 objects in the show—architectural plans and renderings, sketches for stage and movie productions, vintage photographs, furniture, objets d'art and everyday ceramics, posters, books, industrial and household goods—and yet, in a way, none is more telling than the two that open and close it like bookends. The first is an ornate beer stein (p. 122) made in 1896 for the 25th anniversary of the Institut für Gärungsgewerbe (Institute of the Brewers' Trade). The heavy excesses of its decoration alone tell much about the culture against which German artists, artisans and architects began rebelling in the 1890s. The last is the cover for the pamphlet (p. 130) accompanying the infamous 1937 exhibition of *Entartete Kunst* (Degenerate Art) by which the Nazis rejected all that had been vital in the culture before they took power.

Placed thus at the beginning of an enterprise designed to illumine a city's finest hours, that tankard,

with its triumphal figure, is a relic much like the brass dolphin-clock young Christopher Isherwood faced from his writing table in a Berlin apartment in 1930. This was one of many "tarnished valuables . . . of a bankrupt middle class" that he found in his landlady Fräulein Schroeder's flat, and yet, he asked, how could such things "ever be destroyed?" The clock survived. Fräulein Schroeder gave it to Isherwood when he revisited Berlin nearly 22 years later, long after he had published his recollective novels, *Goodbye to Berlin* and *The Last of Mr. Norris,* the basis of both *I Am a Camera* and *Cabaret.*

A trash-filled palatial heaven

The stein, like the clock, can be made to stand for a whole episode in Berlin's history. Buddensieg selected it not only for its representative style but also because Kaiser Wilhelm II drank from it when he made a ceremonial visit to the Brewers' Institute in 1898. It was perhaps just such "mementos and objets d'art . . . so insipid and tasteless, so philistine" that Count Harry Kessler found when he visited the Kaiser's apartments in the imperial palace shortly after his abdication in 1918. Kessler, diplomat, publisher, connoisseur and the preeminent diarist of the period, registered his "astonishment that the wretched, timid, unimaginative creatures who liked this trash, and frittered away their life in this precious palatial heaven, amidst lackeys and sycophants, could ever make any impact on history."

Wilhelm II, a headstrong, restless, peripatetic constitutional monarch, who boasted that he had never read the imperial constitution, took military and foreign affairs as his main interests with, as historian Gordon A. Craig has pointed out, "deplorable results." But he never seemed to be unwilling to meddle in artistic affairs; he did, as we say, know what he liked, and his convictions were narrow and pedantic. Art is like nature, he intoned, existing "according to eternal laws that the Creator himself observes, and which can never be transgressed or broken without threatening the development of the Universe."

The Kaiser's opinions reflected all too well those of the administrators of the state's powerful, conservative cultural apparatus. This led to a situation of almost perpetual conflict that contributed, in a perverse, complex and fascinating way, to the creative vitality of prewar Berlin. The Berlin Secession, established in 1898 by visual artists hostile to the airless system of state education, exhibitions, prizes and commissions, was the most famous and long-term manifestation of this friction, but battles for independence and freshness were carried out along similar lines in all of the arts. There was an ominous side to these conflicts: op-

Side view of artist's house and studio designed in 1904 by then-young architect Hans Joseph Zechlin.

Zechlin's cottagey, comfy residence and studio included, in this front view, an ivied trellis.

Influential architect and teacher Alfred Grenander designed an ideal room with the middle class in mind.

position was both wide and deep, and often was expressed in racial and xenophobic terms. The 1911 manifesto, "Protest of German Artists," disparaging "alien ways," was typical: ". . . when alien influences seek not only to improve us but to bring about fundamental changes, our national characteristics are gravely threatened." Artists such as these, it seems, could be as conservative as any ordinary businessman, bookkeeper or state bureaucrat.

Berlin's cultural upswing in the later years of the 19th century was of course founded upon the city's rapidly expanding economy. The chief commercial and architectural artifact built near the turn of the century was, in fact, an emporium: Alfred Messel's Wertheim Department Store on the Leipziger Platz. This large building was on the outside a virtuoso mixture of Jugendstil—the German Art Nouveau movement—and classical elements. On the inside it was stupendous. Many who shopped there, we are told, described the experience "as similar to that in a Gothic cathedral: a sensation of size, sublimity and costliness in every detail and an intense atmosphere."

Such an ambience cannot be re-created, but it is well suggested in the Cooper-Hewitt show by the architect's elegant original elevations for both exterior and interior, by designs for such splendid details as an enormous stained-glass window, and most of all by an assortment of the kinds of goods, all period originals, people might have seen and bought there. These suggest—as indeed almost everything does in this part of the exhibition—that whatever styles or techniques or materials were employed by the craftsmen of the Wilhelmine era, they were never less than expertly put together, and usually superbly so. To be sure, one gets the feeling of an intense conflict of styles—from kitschy conservative to fashionable Jugendstil to incipiently avant-garde—but an even stronger impression is one of superabundant skill and the wonderful cosmopolitanism of a place that could put all of these things together and on sale.

The prewar spirit in architecture and design is very nearly summed up in the career of one man, Peter Behrens, whose name is always respectfully mentioned in the architecture histories, most often in conjunction with his ground-breaking functionalist 1908 design (p.124) for the AEG Turbine Factory in Berlin (Allgemeine Elektrizitäts Gesellschaft, or general electric company) and for the fact that for a time he nurtured the talents of three 20th-century architectural giants—Le Corbusier, Mies van der Rohe and Walter Gropius. But neither the breadth of Behrens' accomplishments nor the exemplary quality of his development can be suggested in a capsule history.

Behrens, born in 1868, early on demonstrated a nose for the more vigorous currents in the German art scene, along with a desire (and the ability) to work in many disciplines. He began his career as a painter and naturally enough gravitated toward Munich in 1889,

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Peter Behrens' design sense ranged from the massive to this electric fan, 1908.

Outstanding poster artist Lucien Bernhard's design for light-bulb poster is business at its most elegant.

then the nation's leading center of art. His artwork reflected all of the antiacademic currents—Naturalism, Symbolism, Jugendstil—and, inspired by the spreading doctrines of the English Arts and Crafts Movement, which asserted the creative design of everyday objects, he designed a wide range of usable objects. As a member of the close-knit Artists' Colony in Darmstadt at the turn of the century, he began to teach himself architecture: he designed his own house, and practically everything in it.

Behrens' self-transformation into the leading German architect and designer of his generation is nothing short of remarkable. His architecture progressed from a very near-Nietzschean presumption and vision (somewhat improbably he invoked the spirit of Zarathustra rising toward the skylight of the German industrial hall he designed for the Turin exposition in 1902), through a strong Florentine Renaissance revival period, toward an increasingly rational and production-oriented approach. In 1907 he was appointed designer for the vast industrial concern AEG, a job he exponentially expanded. His work for AEG encompassed almost everything, from lamps to letterheads to posters, from irons to toasters to shop windows, from desks to office buildings to factories.

The Deutsche Werkbund was founded in Berlin the same year Behrens got his big job. This makes 1907 a watershed for German—and by that token, as architectural critic Reyner Banham observed, international—architecture. The Werkbund was an association of progessive industrialists (such as Emil and Walther Rathenau of AEG), architects, designers and other experts formed to battle conservative trends in industrial design and, not incidentally, to increase Germany's share in world markets. This issue was what we might today call "good design" but then it seemed, and was, more fundamental, as it involved the stressful coming together of the handicraft traditions of design and production with the processes of industrialization. The Werkbund, as did Behrens, largely favored some sort of standardized production under the guidance of architects as a solution to this problem —a Werkbund slogan was "from the cushion to the city." In this, as in much else, it anticipated many of the aims of the Bauhaus—the all-encompassing school of modern design in postwar Germany that had so much to do with changing the appearance of great cities after World War II.

The Werkbund, like the Secession, contained the seeds of dissent and dissolution. By 1914 both groups were torn by similar conflicts, which the outbreak of war made seem irrelevant, possibly even silly. Artists, architects, artisans, poets, intellectuals of all persuasions were pretty much united in their early enthusiasm for the "Great War." Nonetheless, the issues of individualistic expression and cooperative systems, of artistic freedom (or license, even) and social responsibility, of fiery rebellion and distanced objectivity, were to reemerge in the postwar landscape, which, at least at first, seemed so drastically altered.

Benjamin Forgey, who is architecture critic for the Washington Post, *wrote about Kandinsky in* SMITHSONIAN, *January 1984.*

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Nazi catalog cover trumpeted state-sponsored exhibition of "Degenerate Art" in Munich in 1937.

Bruno Taut, then as now almost unknown in the United States, emerges in this exhibition as a pivotal figure in Berlin architecture in the postwar period, despite the scant space given to him.

Born in 1880, Taut underwent architectural training in Stuttgart and Berlin; he became famous, if ever so briefly, for the pavilion he designed for the 1914 Werkbund exhibition in Cologne. The little cathedral of glass, with its exotic beehive roof, presaged Taut's strange and visionary activities in the turbulent years immediately after the war. Taut was the guiding spirit behind a semisecret, confessional band of architects he called the Glass Chain (*die Gläserne Kette*)—the apocalyptic architectural equivalent, perhaps, of the secretive literary coterie that formed itself around the poet Stefan George. Urged on by Taut, members of the Glass Chain wrote letters and poems to each other; they also produced voluminous drawings, naive, utopian (and often quite beautiful) fantasies that were pure Expressionism in their adaptation of the brilliant, nonnaturalistic colors of the prewar painters. Something of their spirit can be gauged by Taut's spare and artistically ideological dictum: "Architecture does not allow itself to be 'used.' Not even for Ideals. Every human thought must become silent when Art and Delight in Building speak—far away from the foundries and barracks."

Despair and hope

In their excited visionary experimentations, Taut and his friends, like the Expressionist playwrights of the time, were venting feverish hopes born of great despair. Also, it was a time of enforced idleness for architects, when, as Taut said, "writing seems just as important today as designing." If these ideas, as are all utopian schemes, were to some extent megalomaniacal, it is still perhaps too easy to dismiss them. The Glass Chain ideology followed ideas initially propounded in an important prewar treatise, *Glass Architecture*, written by Paul Scheerbart and published in Berlin (where else?) in 1914. For all of its intoxicating rhetoric—"It would be as if the earth were adorned with sparkling jewels and enamels" is fairly typical—the book remains a serious investigation of the potentials of glass as an architectural material. It is not irrelevant even today, especially in its appeal for buildings of surpassing beauty. The spirit of *Glass Architecture* obviously affected Mies van der Rohe when he made those striking crystalline skyscraper proposals (p. 124) for Berlin in 1921 (and, it must be said, also those awful proposals for a complete remodeling, with ribbon-window glass buildings, of Berlin's Alexanderplatz in 1928).

Because of the secret nature of the group, no one can say with any degree of accuracy how many of these visionary sketches actually came into being, but one, in any event, a cemetery vault by Taut's brother, Max, was constructed. By contrast, Eric Mendelsohn, the best and wisest of the architects labeled Expressionist, built quite extensively and well in German cities of the 1920s. But in the arts, as in political and economic life, progressive currents shifted dramatically away from utopian alienation and revolution as the decade wore on. The mid-'20s in Germany was the era, if a few precious years can be called an era, of the *Neue Sachlichkeit*—the New Objectivity.

The best-known architectural examples of this change, and rightly so, remain Gropius' 1925 buildings for the new Bauhaus in Dessau, but the trend was pervasive. It showed up throughout the visual realm, in painting, design, architecture, city planning, as if, in certain well-defined places, a perfect world had arrived. Think, for instance, of those superb tubular

chairs, with us still, by Mies, Marcel Breuer and others—a world of perfect chairs. It showed up exuberantly in a wide range of mass-produced ceramics, brilliantly colored pieces that whimsically and successfully blend motifs from the Russian Constructivists, Dutch de Stijl and Bauhaus objectivity.

Taut was at the very center of this activity, designing perhaps the best, and certainly the cleanest, of the many modern housing projects that were constructed after mid-decade in Berlin. Today it is difficult to muster the kind of appreciation for these projects, with their whiteness, flat roofs and endless rows, that was felt at the time—we see too much of our own, far worse, housing construction in them. The aging sculptor Aristide Maillol, taken by Kessler to visit one of these projects in Frankfurt, exclaimed, "This is the first time that I've seen modern architecture that is perfect"—a bit naive, for sure, but indicative. Still, it is possible and necessary today to respect the nobility of the intention. As it happened, of course, the quiet of the New Objectivity lasted not much longer than the tumultuous time of Expressionism.

Taut's "foundries and barracks," though in the background, were among the major realities of the Weimar Republic after the revolutions had been suppressed and the economy attained something close to normality. Peter Gay has pointed out that high on the list of the Republic's faults was its failure to radically alter, or even to importantly affect, the continuing cartelization of German industry and the "machinery of the old order—the military, the civil service and the courts." When the time came, these defects, relentlessly exploited by the Nazis, were to prove much too much. The Berlin Renaissance, as Varèse said, was born before the war, and so too were the conditions of its destruction.

Architect Erich Kettelhut turned his hand to designing movie sets when funding for large-scale building projects was scarce in depressed economy. This was scene for Fritz Lang's *Die Nibelungen.*

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By Robert Parrish

A garage sale is never as simple as you'd think

There's always something that stays to haunt you—especially if you're a stubborn bargainer

You wind up with the garage packed with everything from bunk beds and other heavy furniture . . . to plastic hair curlers.

The ad in the *Klosters Zeitung* and the *Grisons Bezirks Amtsblatt* read: "Leaving Switzerland—American Style Garage Sale—Bargains! Parrish, Haus Dr. Egger, Klosters."

When you have had a seven-room holiday apartment for 15 years, raised two kids, changed ski gear every time Attenhofer, Head or Spalding dictated a new design and bought new records when the Beatles and the Rolling Stones segued into Rod Stewart or Rod Stewart segued into Britt Ekland, you collect a lot of stuff. Some of the stuff you are reluctant to part with for sentimental reasons. For example, you remember how you bent a ski pole on the Drostobel run and you've held onto it for 12 years—never using it, but keeping it to remind you of the most spectacular deep snowfall of 1964. Its mate, the other, unbent ski pole, has disappeared long ago. Somewhere, you don't remember exactly where. But your wife insists on putting the bent pole in the garage sale on a table with an old flatiron, an ashtray from the Argentine hotel in Dubrovnik and a brand-new, unopened pair of men's long underwear with the price, SFr.8.20, still on the plastic covering.

And that's only the beginning. You wind up with the garage packed with everything from bunk beds and other heavy furniture to plastic hair curlers and odd bits of metal that you vaguely associate with a child's tricycle which, like the unbent ski pole, has long since gone. Maybe they went together. You put your sign on the garage door in three languages and you wait for customers.

The most difficult items to sell in a Swiss garage sale are kids' bunk beds and a Bosch washing machine. I knew the beds were a bargain at 200 Swiss francs. They had cost 900 francs at Möbel Pfister in Zurich, but that, of course, was before they had been slept in for 15 years. Even so, they were a steal at 200 francs.

"*Wieviel kosten die Betten?*" asked a Swiss voice.

I looked up and a young man who worked in the *Gemeinde*, the local town hall, was standing beside the bunk beds. The beds were clearly marked "SFr.200." I didn't know how to ask "Can't you read?" in Swiss-Ger-

Illustrations by Wally Neibart

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man, so I pointed to the sign and smiled, hoping he wouldn't inspect the mattresses.

He looked at the sign and said something that I couldn't understand. Kathie said, "He says he has two small boys, twins, and they're ready to leave their cradles and move into real beds and that he is prepared to offer us 100 francs for the beds."

"Ha," I said, and Kathie kicked me. I moved out of range and said, "You make a joke."

The young man looked at me with serious Swiss eyes.

"Ha, ha" I said, in case he hadn't heard my first "ha." I had forgotten that Swiss don't make jokes about money. He took out a card with his name and phone number on it. "Hans Weicher," he said. "In case you decide to sell the beds for 100 francs, please call me."

I said "Ha, ha" again, and then added, "not a chance. We're not giving them away."

Kathie took the card and said,

"I'll be along in a minute," she said. "I want to count our profits."

"Thank you, Mr. Weicher." Mr. Weicher bowed, clicked his heels and shook Kathie's hand. He didn't shake my hand. Just as well, too. Imagine offering 100 lousy Swiss francs for two valuable, slightly worn and torn bunk beds. He got in his Mercedes 300 SL and drove away.

"I'd like for him to have them," said Kathie. "He wants them for twins. Don't you think that's cute?"

Before I could tell her how cute I thought it was, the local butcher came in and offered 650 francs for the washing machine. It had cost 1,800 francs two years before and was marked SFr.900. I said we couldn't let it go for less than 800 francs. Kathie said, "Or seven-fifty," and I went upstairs and built a fire and poured myself a stiff Cherry Heering (all that was left of our usually well-stocked bar) to avoid a family quarrel. I decided that my wife was better at garage sales than I was.

At the end of the day, Kathie announced that she had sold everything except the washing machine. "That's your baby," she said. "Everything else is gone."

"What about the beds?"

"Gone."

"And the bent ski pole?"

"Gone. And the ashtray from Dubrovnik and the long underwear and 26 pairs of ski goggles, my old plastic hair curlers and the nine logs of firewood. All gone. Everything except the washing machine, gone. And I've made over $500 in Swiss francs."

"Bully for you, Buffalo Bill," I said. "Would you like a drink?"

"What I'd like is for you to call the butcher in the morning and tell him you'll let him have the washing machine for 700 francs. If he hesitates, tell him six-fifty, then six, five, four, three and so on."

"You're a tough bargainer," I said. "The guy's already said he'd give us 650 francs for it and you're telling me to sell it to him for 'six, five, four, three and so on'!"

"He's a very nice man," said Kathie.

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I poured us each a Cherry Heering.

"I know his wife," she said. "They have four kids. Have you any idea how much laundry four kids can come up with each day?" she said.

"Drink your drink," I said.

"Drink yours," she said. She was getting aggressive.

"I don't feel so well," I said. "I think I'll go to bed." I stood up and looked at her sitting by the fire. "Are you coming?" I said.

"I'll be along in a minute," she said. "I want to count our profits." She stretched out on the green-and-blue hearth rug and dumped a cigar box full of money on the beautiful, polished parquet floor.

At 7:03 the next morning, a giant Kuoni moving van pulled up in front of our apartment. Three strong, efficient men started to move our remaining furniture into the van. Kathie offered them coffee and they told her they couldn't have a break until 9:30. They were miracle workers. I have never seen anyone do so much in such a short time. At 11:30 they had most of the contents packed and carefully stowed in their van.

I had swept out the garage and tried to move the washing machine to the front so that prospective buyers could see it. I couldn't budge it. Swiss washing machines (and all washing machines as far as I know) have a cement base, a) to keep them steady when they are in action chewing up your clothes and, b) to keep elderly husbands from moving them to the front of Swiss garages. I asked one of the Kuoni men to help me. He was about 25 years old and looked like an Olympic weight lifter. We couldn't move the machine an inch. While we were trying to catch our breath, the butcher pulled up in his Volkswagen.

"*Guten Tag*," said the butcher.

"Ah, *guten Tag*," I said. The Kuoni man went about his business.

"I have been discussing the washing machine with my wife," said the butcher.

"So have I," I said. "That is, I have been discussing it with *my* wife."

"Seven-seventy-five is as low as I can go," I said. "Take it or leave it."

"My wife says we'll take the washing machine but that we can only pay 500 francs." He laughed a little and then said, "I told her I had offered 650 francs and that you had not accepted the offer so she said I should offer you 500 francs. You know how wives are."

"Yes, I do," I said. "It's funny you should say that, because while your wife was cutting the price of my wash-

Robert Parrish, author of Growing Up in Hollywood *(Little, Brown), wrote on John Ford in March 1986.*

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The three Kuoni men somehow got the washing machine into the back of the car.

ing machine, my wife was raising the price. When you didn't accept her special rock-bottom offer of seven-fifty last night, she said, 'That washing machine is practically new. Raise the price back to 900 francs and don't take a *Rappen* less.' "

"How old is the machine?" asked the butcher.

"We bought it from Dat Wyler, the electrical store, for 1,800 francs two years ago," I said. "I can show you the bill."

"I can give you 600 francs," he said.

"Nine hundred," I said.

"Six-fifty if you promise not to tell my wife," he said.

"Eight-fifty, if you promise not to tell mine," I said.

"Seven," he said.

"Eight."

"Seven-fifty."

"Seven-seventy-five."

"Seven-fifty is as high as I can go."

"Seven-seventy-five is as low as I can go. Take it or leave it."

"*Was*?" he said. After all the intense bargaining, he suddenly couldn't understand English.

"If you want it for 775 francs, it's yours," I said. "Take it away." I knew he couldn't take it away without a low-bed tank retriever, but I didn't tell him that.

"Seven hundred and fifty francs," he said. He took out a pencil and wrote "SFr.750" on the back of an order for two pounds of bacon and a rack of lamb.

"No," I said. I took his pencil and wrote "SFr.775" and handed him back his pencil and his order book. He put them both in his pocket and walked away. He didn't say "No" or "*Nein*" or "Are you crazy?" or "My wife won't let me" or "I'll think it over"—or anything else. He just walked to his car and drove away.

I fought back an impulse to kick the Bosch washing machine with its cement base. The Kuoni men were putting the last of our Graubünder furniture in the van. "I beg your par- please put this washing machine in my Volkswagen Varient 1600 station wagon?"

The three Kuoni men looked at the machine and the one who had tried to help me before said, "It's bolted to the floor."

"No," I said. "It's just heavy. I'm sure you can get it into the station wagon if all three of you really put your minds and your backs to it." They got some wide, web straps which they put over their shoulders and they somehow got the washing machine into the back of the station wagon just as my wife arrived to pack it for the trip back to London.

"Why are they putting the washing machine in the car?" she asked. "I thought you were going to sell it to the butcher."

"It didn't work out," I said.

One of the Kuoni men said something in Swiss-German and pointed to the back tires of the station wagon, which were now half-flat.

"The washing machine is too heavy," said Kathie. "The Volkswagen can't take it. We'll break the springs."

"Nonsense," I said. "The VW can take anything. We just need to put a bit more air in the tires." I thought I saw the Kuoni man roll his eyes, but I wasn't sure.

"But what are we going to do with it?" said Kathie. "We've got a washing machine in London."

"I'm not going to practically donate a perfectly good washing machine to a crooked Swiss butcher and his wife just because they think they have us over a barrel," I said. "I'd rather take it to London and give it to the Salvation Army."

"What about the different cycle and the voltage and the customs and all that?" asked my wife.

"I'll handle it," I said. I gave each of the Kuoni men 20 francs and we drove our overloaded Volkswagen to Mr. Kaufman's garage. Mr. Kaufman filled the tank, then filled the tires, then shook his head. He looked in the back of the station wagon and said, "You must be smuggling gold. What is so heavy?"

"My wife," I said. "It's the Swiss cooking."

"You better check the tires from time to time," he said. "I think you have too much weight."

"Thank you, Mr. Kaufman, I'll do that," I said. Kathie and I started down the long descent to Landquart.

I don't think I've ever seen the Klosters Valley so beautiful. It had snowed the night before and the snow covered the high mountains, but the trees in the valley with their stunning fall colors sparkled in the morning sun.

"Do you think we'll ever come back?" asked Kathie.

"Sure," I said. The car felt rather strange on the turns.

"We've been coming here for over 15 years," said Kathie. "Some of our best friends are here."

I shifted into a lower gear and wished I had sold the washing machine to the butcher. "So we'll come back to see them," I replied.

"We won't, you know," she said.

There was definitely something wrong with the way the Volkswagen was handling. "Why not?" I said. "Why do you say we won't come back

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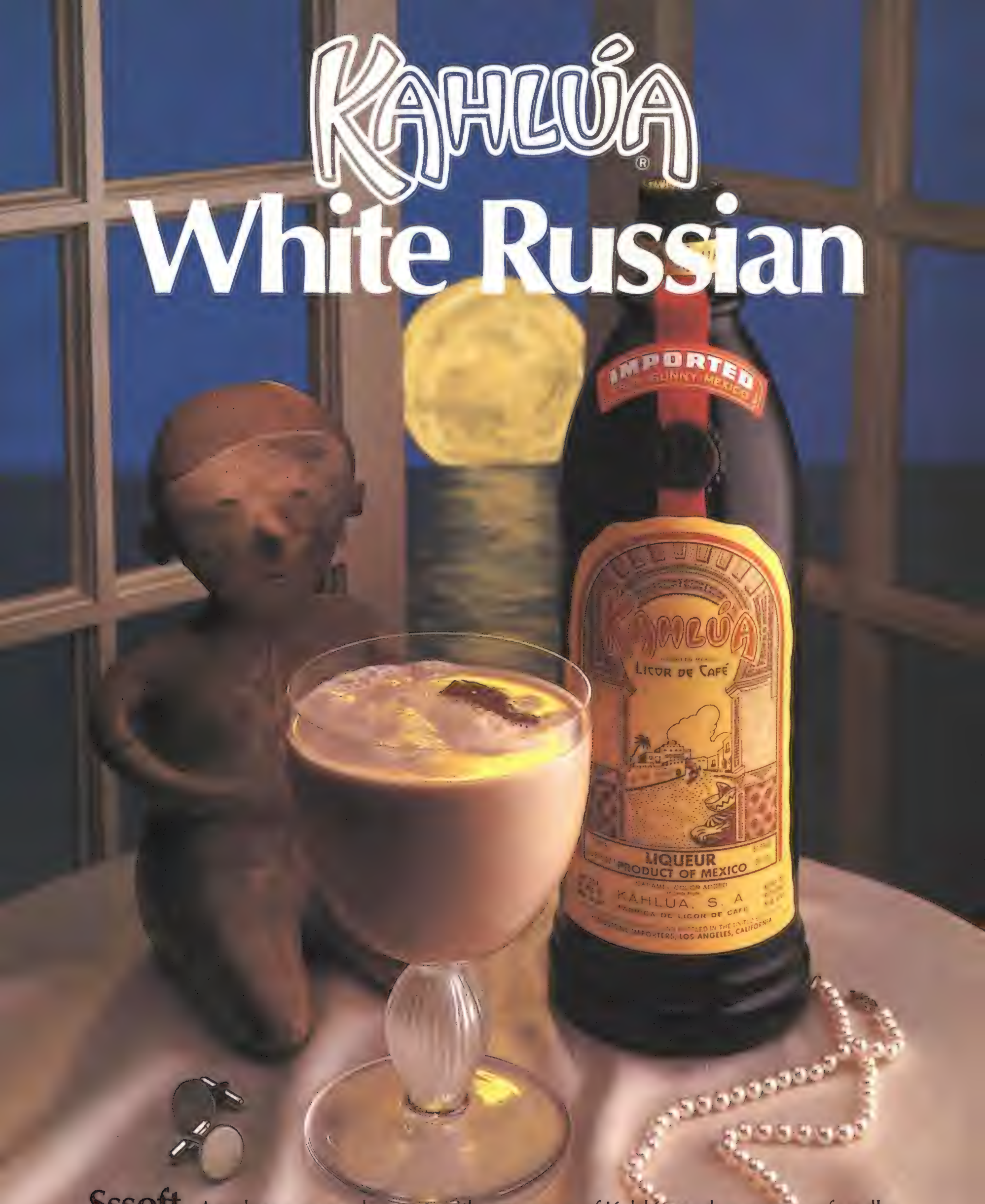

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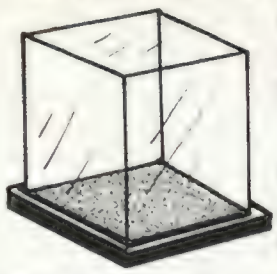

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and see our friends?" I tried the brakes.

"Because it's the end of an era," she said. "When eras end you don't go back and see what's happened. You move on. You live your life."

The brakes worked but the back end of the car swayed around unnaturally. "We can come back and stay in a hotel," I said. "You can have breakfast in bed."

"It won't be the same," answered Kathie. The back of the Volkswagen was now whipping around like a roller coaster. Kathie pretended she didn't notice it. "You can't recapture the past," she said. I saw a filling station on the right side of the road and pulled in. "Why are we stopping?" asked my wife.

"I want to check the tires," I said. I got out and both of the back tires were almost flat. They were new tires so I knew that the trouble must be the overloading of the Volkswagen, the damn washing machine.

"We've got to get rid of the washing machine," I said. "It's too heavy. The car won't take it."

Instead of saying "I told you so," my wife said, "What'll we do?" That's why the marriage had lasted 33 years.

"You phone Kuoni in Zurich and tell them that we'll leave the washing machine with them this afternoon," I said. "Tell 'em it's an emergency."

"Think they'll take it?" she said.

"Of course they'll take it," I said. "You pay them lots of money and they take things. That's their business."

"Even on Saturday?" she said. "We won't be in Zurich until after noon and they'll probably be closed."

"*Guten Tag*," said the gas-station attendant.

"Do you speak English?" I said.

"At your service," he said.

"I have a Bosch washing machine in perfect condition in the back of this car," I said. I pointed in through the window.

"At your service," he said again.

"Well, now," I said. "The machine is quite valuable, but I'm prepared to

How high blood pressure can destroy high hopes

The effects of untreated high blood pressure often strike without warning. While high blood pressure (hypertension) by itself might not show any symptoms, there are a range of complications that can result in permanent impairment or death. The complications show up...

Through strokes
Constant high pressure against blood vessel walls in the brain can eventually cause them to break—one form of stroke. High blood pressure seems to speed up atherosclerosis, or hardening of the arteries. As arteries become less flexible and clogged with fatty deposits (cholesterol), it is more and more difficult for the blood to flow. If this happens to the blood vessels supplying your brain, the result can be a blocked artery that will cause a different kind of stroke known as cerebral thrombosis.

Through other problems
Not only are the blood vessels going to your brain affected by high blood pressure, but also the vessels to your heart may be seriously damaged. This results in chest pain (angina pectoris) or a heart attack (myocardial infarction). Hypertension also can trigger problems with the flow of blood to your kidneys, your eyes, or your hands and feet.

Who is at risk?
While individuals of any age can get high blood pressure, it is far more common in older age groups. It affects close to half the population over the age of 64. Under the age of 50, hypertension is more common in men than in women. After 55 or 60, it is more common in women than in men. Yet more men die from hypertension complications than do women.

Statistics also show that blacks, compared to whites, get high blood pressure earlier in life, at higher levels and twice as often.

People of any race who are overweight suffer more often from hypertension. High blood pressure also runs in families and may be aggravated in some cases by consuming too much salt.

What can be done about high blood pressure?
1. Live a healthy lifestyle. Lose excess weight; stop smoking; reduce stress, fat and salt intake; and make sure you get enough exercise, rest and relaxation.

2. If necessary, your doctor will prescribe an appropriate blood pressure medication. While hypertension medications available 20 years ago sometimes caused severe side effects, including changes in blood lipid levels, now there is a growing spectrum of medications that provide safe and effective therapy while focusing on the specific abnormalities of hypertension affecting you. Coordinating efforts closely with your doctor will ensure that he or she will prescribe the right medicine or combination of medicines to keep your pressure under control with few significant side effects. The use of anti-hypertensive medicines, together with improved lifestyles has helped cut one type of stroke death in half and reduced heart attacks by one-third.

3. Watch out for other health conditions that may aggravate effects of hypertension. For example, the risk of heart disease increases if both high blood pressure and high cholesterol are present. Your doctor can test your blood pressure and your cholesterol level and interpret the results.

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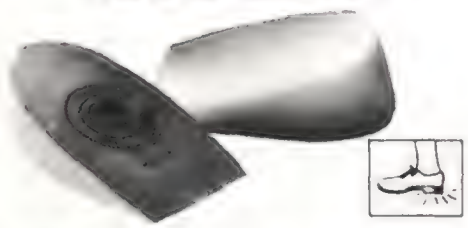

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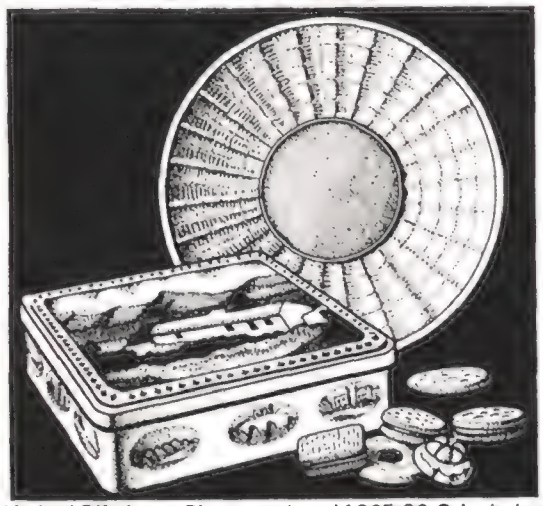

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let it go for far less than it's worth because it seems to be too heavy for the Volkswagen." I pointed to the beleaguered tires.

"At your service," said the attendant. He got the tire-inflating machine and proceeded to pump up all of the tires. I followed him around.

"My wife bought it two years ago at Dat Wyler's and it's barely been used," I said. "We only come to Switzerland for holidays." He looked up and said something in Swiss-German. It seemed to be about how much pressure I wanted in the tires, so I said, "*Ja, gut.*" He gave the left rear tire another shot of Swiss air and dragged his little piece of equipment up to the front of the car. I looked around and saw that Kathie was doing a crossword puzzle. I knelt down beside the attendant. "Look," I said. I didn't whisper but I lowered my voice, like a racetrack tout. "I'm going to be frank with you. My wife and I have had a disagreement about the washing machine. She thinks I should have sold it to Mr. Kaiser, the butcher, in Klosters. For various reasons that I won't bore you with, I disagreed. I decided to take it to London. Now I find that it's too heavy for the Volkswagen." I pointed to the tire. The attendant gave it another squirt. "If you'll get a couple of your friends to help you unload the washing machine, you can have it, free. It won't cost you a cent." He looked up and smiled. I smiled back.

"At your service," he said. I sud-

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denly realized that those were the only three English words I had heard him say.

"Go to hell," I said.

"At your service," he repeated.

"Are you sure you speak English?" I asked.

He finished inflating the last tire, smiled and said "At your service" again. I gave him a franc, got in the car and pulled out into the mainstream of traffic headed toward Zurich. It had started to rain. Not a nice, little, misty, poetic shower; a sudden Swiss downpour.

I drove as fast as I dared under the circumstances and arrived at the Kuoni office on Neugassestrasse at five minutes after 12. As I stood in the rain, the watchman pointed to four signs which gave the office hours in four languages. The English sign said "Closed 12 Noon Saturday" and, as far as I could tell, the other signs said the same thing in German, French and Italian. I asked him if he wanted a washing machine and Kathie said, "I think we're wasting time."

"Why?" I said.

"He doesn't look like a washing-machine buyer," she said.

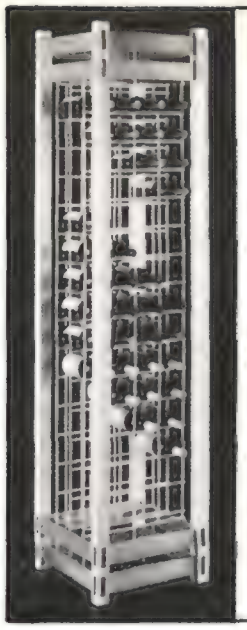
"What does a washing-machine buyer look like?" I asked.

"I don't know," she said. This took me by surprise because, after the opening I had given her, I thought she was going to say, "Like a butcher." I got in the car and slammed the door. "Let's drive around and see if we can find someone who might take it off our hands," she said.

"Everything's closed," I said.

"We're almost out of gas," said Kathie. "Let's go to a gas station where they speak English and ask if they know anyone who wants to buy a washing machine." The tires were almost flat again, too.

Six blocks from the Kuoni office, at the corner of Neugassestrasse and Berndtstrasse, we came to a huge used-car lot. There must have been 500 used cars of all makes with small red-and-white banners hanging for-



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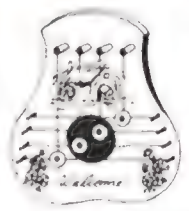

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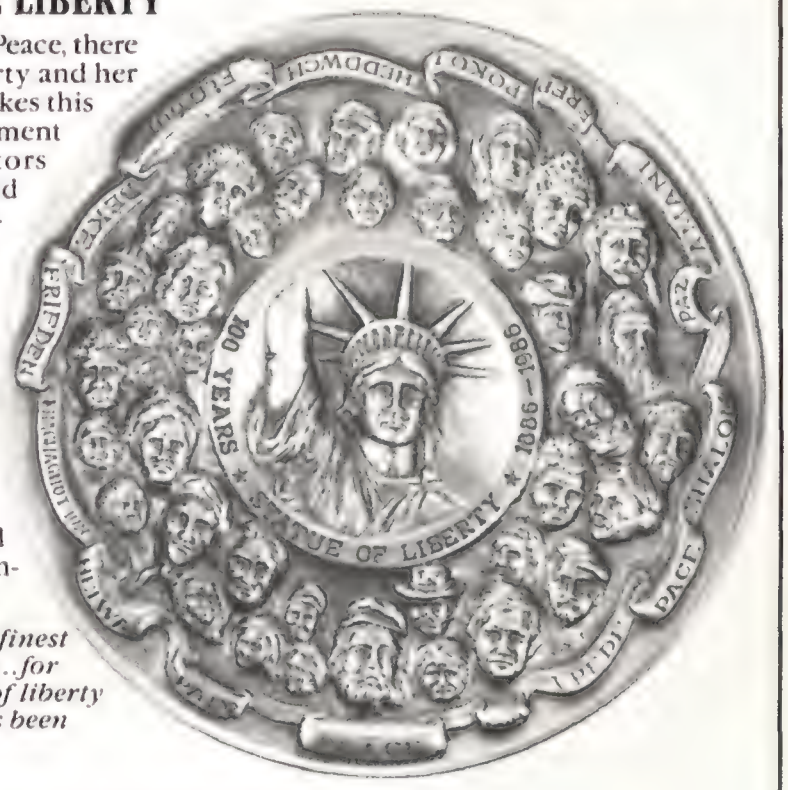

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lornly from the radio aerials of each one. In the back, between a Mercedes 240 and an Alfa Romeo sports car was a run-down, two-wheel trailer that served as an office. On the top of the trailer was a sign that said, "*Occasions—Wir Kaufen und Verkaufen.*"

"*Occasions*!" said Kathie. "That's French and it means opportunities. Pull in."

"It means they're trying to sell their used cars," I said. "It doesn't mean they want to buy a used washing machine."

"Don't be silly," said Kathie. "Pull in. I have a hunch about this place. Besides, I have to go to the bathroom."

"It's a used-car lot," I said. "Not a public toilet."

"There's a gas station next to it," she said. "Pull in."

I did as I was told and when the Volkswagen groaned to a stop, Kathie jumped out and ran through the rain to the ladies' room. I told the attendant to fill the tank with Total (regular) and check the tires and I hurried over to the trailer-office. A very good-looking young man said, in perfect English, "Some weather, eh? Like England. What can I do for you?" I remembered my experience with the "at your service" fellow and I thought maybe this guy will keep saying, "Some weather, eh? Like England. What can I do for you?" over and over again, so I said, "How's the rest of your English?"

There was definitely something wrong. . . . The brakes worked but the back end of the car swayed around unnaturally.

"I beg your pardon?" he replied.

"Ah," I said. "You speak English."

"Yes, I do," he said. "I went to the London School of Economics for three years."

"Then you're my man," I said. "You'll understand my problem."

"Please sit down," he said.

I sat in a comfortable canvas chair and told him about the washing machine. I told him about the tires and the springs on the Volkswagen and the cement in the washing machine and the fact that we already had a washing machine in London. He listened patiently, and when I finished he said, "Yes, I see. I sympathize with you. I understand your problem. The thing is, though," he said, "we are in the used-car business, not the washing-machine business. How much mileage do you have on the Volkswagen?"

"More than I have on the washing machine," I said.

"I could probably let you have 2,500 francs if the tires are in good shape," he said.

"They'll be OK if I get rid of the washing machine," I said. I took out a brand-new 100-franc note and put it on his desk.

"What's that?" he asked.

"It's a brand-new 100-franc note," I said. "It's yours if you'll take the washing machine off my hands and not tell my wife the terms of our deal."

"Does the washing machine belong to you or to your wife?" he asked.

I put another 50 francs on the desk and reached in my pocket and put a handful of coins on top of the two notes. "That's it," I said. "That's all I've got." I must have looked as though I were going to burst into tears because his big Swiss heart melted. He put the two notes in his wallet and started to count the change. His hands moved like a conjurer's—or an experienced bank teller's. He quickly separated the five-franc pieces, the two francs, the one franc and the various other coins. He counted them and they came to SFr.-18.75. He handed me back two coins. "This is English money," he said.

"Oh. I'm sorry," I said. "I didn't realize . . . I mean I wasn't trying to unload sterling on you." The Swiss were not too crazy about the British pound in those days and I saw my deal going down the drain. I picked up the two tenpenny coins and put them in my pocket. "I'll make it up to you," I said. "I can give you a check on the Swiss Credit Bank for the equivalent amount."

"Forget it," he said. "I'm glad to help you out." (As I suspected, he was all heart.) "Let's go get the washing machine." We dashed through the

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rain to the gas station and he got three mechanics to help him unload the machine. He paid them each a franc of my money and told them to put it in the back end of his trailer-office. I shook his hand and as we drove away, I looked through my rearview mirror. The front end of the trailer-office was two feet in the air and the back end was on the ground. The used-car dealer from the London School of Economics was standing in the rain and waving his arms and yelling at the three mechanics.

We drove for a while in silence. "The rain has stopped," said Kathie.

I turned the windshield wipers off. "That's because we got rid of the you-know-what and we're out of Switzerland," I said.

"Don't be unfair," she said. "We had some of our best years there."

The sun came out and made a French rainbow. We were driving through the Doubs Valley between Besançon and Beaune. Route N73 curved along with the river Doubs, and the Volkswagen was no longer swaying from side to side. We had a reservation at the Hôtel de la Poste in Beaune that night, where we would get the best wine France had to offer and a meal that was too good for us. I was sitting next to the person I loved most in the world and she asked, "Why didn't the butcher buy the washing machine? How much did he offer?"

I turned on the radio and concentrated on tuning it to Radio Luxembourg.

"Were you able to make a better deal with the fellow in Zurich?" she asked. "He seemed nice. Spoke perfect English."

"I think I can get the World Series on the Armed Forces Network," I said. I turned up the volume and almost blasted us both out of the car with an Austrian military band. I turned it down.

"He probably has kids," said Kathie. "That's why he bought it. How much did he pay?"

The band music finished. "Shhh," I said, "I think this is it." An Austrian voice said something that I didn't understand and then said "*Oklahoma!*" The overture of the Rodgers and Hammerstein musical burst out of the Volkswagen's Blaupunkt radio. "Ok-la-homa, where the wind comes sweepin' down the plain. . . ." *

This was "our" song, "our" musical score, "our" 1943 wedding music. We had seen the show in New York the night before we were married. I was a sailor in the U.S. Navy and Kathie was a Red Cross girl. The war was on and we were in love. Since then, every time either of us heard any of the music from *Oklahoma!* we got sentimental and looked around for each other.

"Don't throw bouquets at me, Don't please my folks too much." I turned the Blaupunkt up. "Don't laugh at my jokes too much—People will say we're in love!" *

Kathie put her head on my shoulder and sang the lyrics along with Shirley Jones. "Don't take my arm too much," she sang. "Don't keep your hand in mine." She put her hand on the steering wheel on top of mine. "Your hand feels so grand in mine," she sang, and pressed my hand. "People will say we're in love!" I gripped the wheel for all I was worth and aimed for the French rainbow.

The sun came out and made a French rainbow. I was sitting next to the person I loved most in the world.

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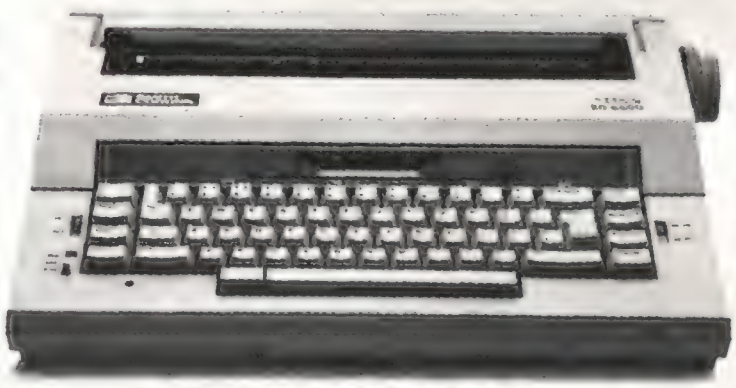

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Points of origin

Dürer *Adoration* shows Gaspar (kneeling with gold), Melchior (standing with frankincense) and Balthazar (right) bearing myrrh.

Those most-treasured ancient offerings, frankincense and myrrh, can be had today, but now fetch less-than-princely sums

Legions of piping schoolchildren, dragooned year after year into the Christmas pageant, still have trouble distinguishing among Gaspar, Melchior and Balthazar. But the three kings' gifts stick in the mind. Perhaps this is because of the stately thump, thump, thump of the music or the sonorous lyrics that describe them. Not only "Gold I bring to crown Him again," but frankincense and especially myrrh:

"Myrrh is mine; its bitter perfume
Breathes a life of gathering gloom.
Sorrowing, sighing, bleeding, dying
Sealed in a stone-cold tomb."

Today everyone knows how precious gold is. At current rates a pound of butter turned into gold would be worth about $8,000. Frankincense and myrrh, though, are a puzzle. Why were they so valuable—as valuable as gold and thus totally fitting as a royal gift in the year that Christ was born? And where did they come from? The answer is that they were found in only one corner of the world, the northern corner of Somalia and the southern tip of Arabia, and they are both aromatic gum resins and come from several trees that are most unprepossessing to look upon.

Under the bark of these trees are canals and pockets which fill up with sticky fluid. A scraggly, thorny tree, *Commiphora myrrha*, yields the kind called myrrh, while *Boswellia frereana* and *Boswellia carteri*, both taller, with tiny leaves growing at the ends of their branches, produce frankincense. At the height of their value, a pound of frankincense apparently sold for as much as the equivalent of $500 today, special deluxe myrrh for up to $4,000 per pound. And for centuries they were controlled as monopolies by local kings.

Needless to say, the rulers of what are today Somalia, the Yemens and Oman, across the Gulf of Aden, were not inclined to share their monopoly. They even circulated hair-raising stories to keep potential trespassers off their invaluable premises. One such, later picked up by the Greek historian Herodotus, a man with a keen ear for odd tales, warned that each frankincense tree was guarded by a multitude of flying snakes. The only way to get rid of them was to smoke them out by burning storax, a pungent resin used as a fumigant.

In southern Arabia the crown creamed off 25 percent of the myrrh harvest, and kept ironclad control of frankincense by having every last bit of it brought to royal warehouses at the capital. "No loading on a ship is allowed without the king's permission," reported a merchant who did business with southern Arabia in the first century A.D. "And," he added, "if even a grain is taken aboard, the vessel can't sail." That covered trade by sea. As for land, whatever came in from the groves had to enter by one particular city gate, and whatever went out for sale traveled on the camels of one particular trusted tribe.

The actual harvesting of frankincense and myrrh was simple. In spring, after the heat had arrived but before the summer monsoon rains, the frankincense gatherers went out to the trees, made some gashes in the bark, and then went home. A week or ten days later they returned to find lumps of the milky-white sap that had oozed out, sometimes as big as an egg, either still adhering to the tree or strewn on the ground. In a week or so these lumps dried to an amber color. Myrrh gatherers had even less to do, since the bark of the myrrh tree will often crack of its own accord, letting the sap exude. It then dries to a reddish-brown resin.

The word myrrh comes from the Greek name for the substance, *myrrha*. This is itself derived from a Semitic name which means "bitter." Frankincense in Greek is *libanos*, derived from a Semitic word meaning "white." Ancient descriptions of frankincense refer to the best grade as being whitish in color. Our

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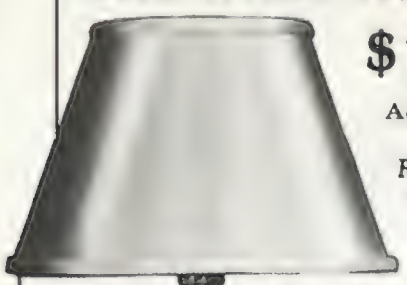

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word "frankincense" merely means "fine incense." It comes from an old French term, *franc encens*, coined in the Middle Ages after the Franks had taken over what is today France. *Franc encens* was to other kinds of incense as the Franks were to the rest of the population.

To those who lived in the frankincense region in ancient times, its unique product was somehow divine. Gathering it was restricted to only 3,000 specially appointed families whose members were held to be sacred. This status meant that they had to be careful about activities that were considered to be taboo; during harvest time, for example, there was to be no sex or going to funerals. Since the crop they gathered was also sacred, theft was no problem: frankincense could lie piled about on the docks and no one dared make off with any—because it was understood that the gods had their eye on it.

Trouble began only when delivery was made to buyers who had no such religious scruples. In Alexandria, one of the centers where frankincense was packaged for shipment around the Mediterranean, antitheft regulations had to be strictly enforced: employees worked with masks or close-meshed nets over their heads, the tights or loincloths they wore on the job carried identifying marks, and they had to strip for search on leaving. Adulteration was as much a problem as theft. A common practice was to cut pure frankincense with the much cheaper resin of fir, spruce or juniper. Myrrh was harder to tinker with since the result could be easily detected if it did not have the distinctive bitter taste of the genuine thing. One favored technique was to douse the concoction in cucumber juice.

Long before the story of the three kings, frankincense and myrrh seemed to go together naturally, like pepper and salt, though the two were used in very different ways. Frankincense was for burning, to produce a smoke with special fragrance that for thousands of years has been a significant element in religious ritual. The pharaohs of Egypt offered up frankincense to their gods. In the Book of Exodus, Aaron is instructed to burn it morning and evening. It smoked on altars the length and breadth of the Greco-Roman world. Moreover, it was de rigueur for private rites as well. Families burned frankincense on the altars of household gods, and it was regularly used at funerals. One way to make an ostentatious display of wealth—or grief—was to toss extravagantly large amounts on a pyre. Consequently, frankincense was bought by all segments of the population, from the agents of temples to the sorrowing relatives of someone who had just died.

Myrrh cost a good deal more than frankincense, the best grades over twice as much. It was used in expensive medicines and cosmetics, its purchasers mainly pharmacists and perfumers. The amount consumed, inevitably, was far less than that of frankincense. To upgrade cheap aromatics, such as oil of myrtle or of bay, the perfumers would merely add a touch of myrrh.

The "fair young virgins" who, along with Esther, were rounded up for King Ahasuerus, received a six months' massaging with oil of myrrh as part of a treatment to qualify them for the royal nostrils. Myrrh generally came in the form of unguents or pomades; myrrh pomade, for example, was a favorite among both men and women (though not among all men, to judge from a line in Virgil's *Aeneid* in which a tough Italian leader sneers at Aeneas as a "Phrygian effeminate" who "curls his hair with a hot iron and drenches it with myrrh").

As a medicine myrrh was taken internally for fever, dropsy, asthma, diarrhea and sundry other ailments. Externally it was used on open wounds. The theory seems to have been that since wounds smell bad, improving the smell will improve the condition. It may indeed have promoted healing: current experiments indicate that myrrh may actually have antiseptic properties.

The export of myrrh and frankincense can be traced back at least to the middle of the third millennium B.C., when a pharaoh dispatched an expedition to bring home supplies. Around 1500 B.C., Hatshepsut, the great Egyptian queen, sent a fleet that returned not only with myrrh but with myrrh trees for transplanting. The experiment obviously did not work.

When the Queen of Sheba visited Solomon, she came "with camels that bare spices." Since her kingdom was in Arabia, these could well have included frankincense and myrrh. Herodotus reports that Darius, the mighty king of Persia who reigned around 500 B.C., annually received 1,000 talents of frankincense from the Arabs—quite a lot, even if the figure (it works out to 24.5 tons) is much exaggerated. In the ensuing Greek

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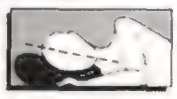
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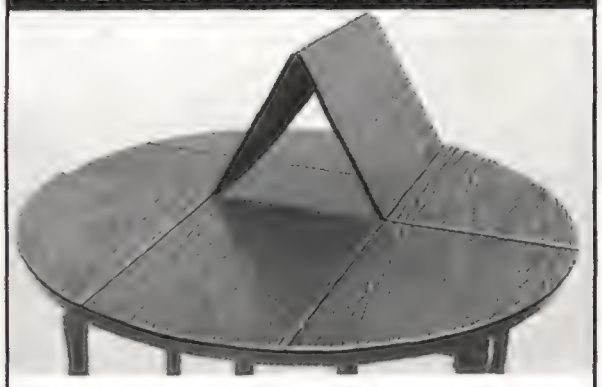

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and Roman times the volume and intensity of the trade steadily increased. On land, camel caravans trudged from southern Arabia by way of a route that cut north through the western part of the peninsula to Gaza at the southeast corner of the Mediterranean, whence vessels sailed to all major ports. The water route passed through the strait of Bab al-Mandab into the Red Sea to ports on the Egyptian side. From there, camels carried the loads over Egypt's eastern desert to the Nile to be floated down to the port of Alexandria, which, like Gaza, distributed to the rest of the Mediterranean world.

The trade reached its height during the great age of the Roman Empire, the first three centuries A.D. The next century it fell on hard times. One cause was the austere early Christian church: burning of frankincense, it felt, was well and good for pagans worshipping their heathen gods, but Christians had no need of it. And the church fathers must have taken a dim view of myrrh; after all, its prime use was to add a seductive scent to the flesh. But a longer-lasting cause was the disintegration of the Roman Empire. The trade network that had woven together the world from Syria to Spain came apart; populations shrank and no longer had the money for exotic and expensive imports. By the fifth century the church did begin to allow the use of frankincense in its ritual, and not long after, Constantinople replaced Alexandria as the center of an important perfume industry.

All this was too late and too little. The trade in frankincense and myrrh never came near its former volume, but it never ceased. Somalia still exports frankincense, though not very much. You can buy it in New York for $15 a pound (only about twice as much as top-drawer tea) from Sindoori Imports, which sells mostly to Greek Orthodox churches. It smells—well—like incense, like the smell you smell during Mass. Myrrh, which has a heavy, acrid scent, also costs about $15 a pound and mostly is used in perfumery and for medicinal purposes, particularly in soothing mouthwashes and in some toothpastes.

But modern Somalis find it more rewarding to grow bananas, and in Oman the thing to do is pump oil. Instead of tending the trees, men have begun cutting them down for firewood or cutting them up for camel and goat fodder.

Lionel Casson

Book reviews

A Voyager Out: The Life of Mary Kingsley
Katherine Frank
Houghton Mifflin, $18.95

"The fascination of the African point of view," wrote Mary Kingsley after her first trip to West Africa in 1893, "is as sure to linger in your mind as the malaria in your body. Never then will you be able to attain to the gay, happy cock-sureness regarding the Deity and the Universe of those people who stay at home."

Yet "home" itself was a troublesome idea for this most Victorian of Victorian travelers. As she prepared for her second trip to West Africa in 1895, she felt she was, as she later told one of her many lecture audiences, at last and truly "homeward bound." And looking back now, it seems both sad and fitting that, while nursing casualties of the Boer War near Cape Town in 1900, Mary Kingsley, age 37, was to die in Africa, the only place, to judge from all the evidence, where she had ever felt truly alive.

A Voyager Out: The Life of Mary Kingsley is a new biography by Katherine Frank, an American who lives and teaches in West Africa and whose writing clearly reveals that she loves the people and the land as much as Mary Kingsley did. This personal passion, combined with careful scholarship, has produced a model biography that brings Frank's subject to life in all her complexity. It also illuminates both the world of West Africa she explored and the English Victorian world that made Kingsley simultaneously a strong-minded individual and a perfect exemplar of its principles.

Kingsley's father—the family name lives otherwise because of her writer and clergyman uncles—traveled widely and

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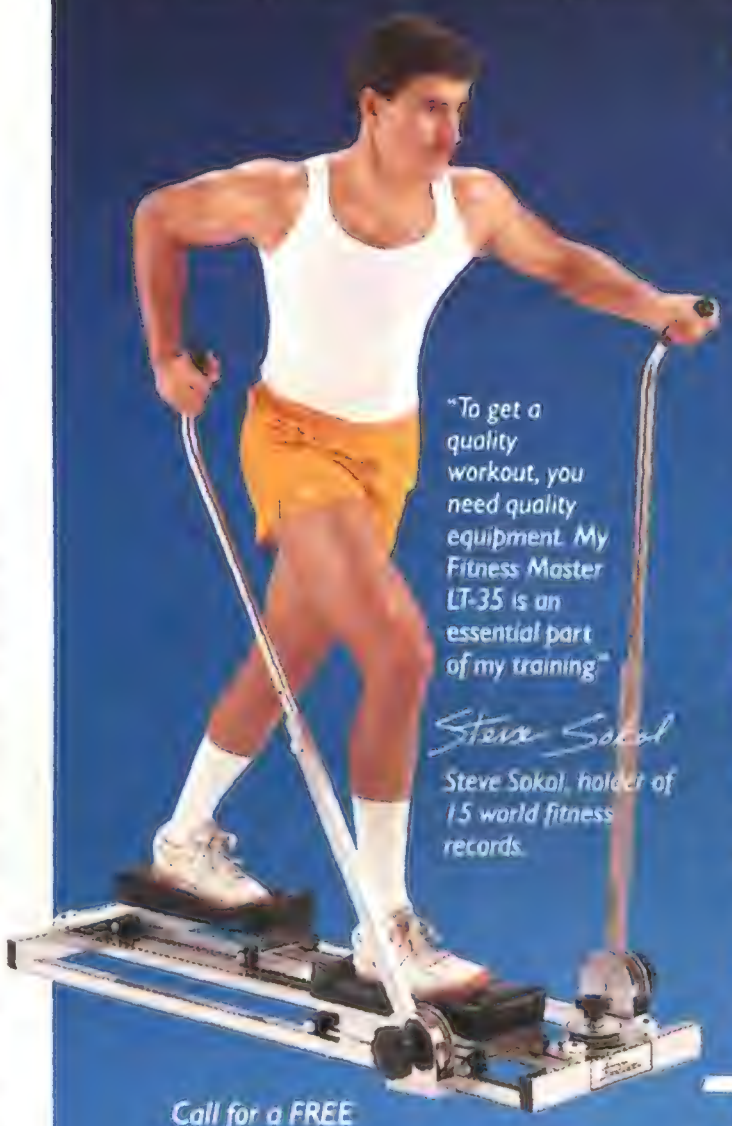
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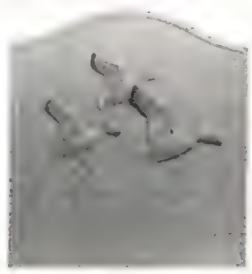

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his travelogue-letters filled the narrow life of his daughter. Uneducated but self-taught, burdened with the total care of her bedridden mother, the girl lived for those letters and her extensive readings of Stanley, Burton and the less-known W. Winwood Reade, Paul du Chaillu and Savorgnan de Brazza—all the intrepid explorers of Africa. But she could only plan her own travels after the deaths of her parents and during the absences of her brother, for whom she felt obliged, as a proper Victorian woman, to keep house.

For Mary Kingsley, freedom meant Africa. There she bloomed with health and wit as she explored the rivers, swamps and forests of the Congo, left her calling card at the top of Mt. Cameroon, collected rare fish and other specimens for the British Museum, and studied the ways and spiritual beliefs of tribal peoples. Regarding Africa, she held strong views and was particularly critical of missionary activities. Back in England, her account of her first trip, *Travels in West Africa*, alternating sections of serious ethnographic study with hilarious tales of her own "knockabout farces," became a best-seller in 1897. In one episode, she likens a hippopotamus rampaging through a village to "a furniture van in hysterics." Another book followed and Kingsley became a popular lecturer.

Despite appearances, however, Mary Kingsley was neither a precursor of Ruth Benedict and Margaret Mead nor an early feminist. Indeed, she willingly sat silent at a scientific gathering which did not permit women to speak while a male member read her paper, and she publicly condemned the efforts of "shrieking females" to join learned societies. Like many Victorian spinsters, she spent most of her days nursing sick and elderly relatives and friends and running her brother's house, stealing time only late at night to write her books and lectures. She campaigned for nothing—except decent treatment for Africans—and sought no glory for herself. Indeed, as Frank observes, her travels to West Africa were "an intensely private, personal journey."

Kingsley's own writings are unique: careful observation combined with a very personal narrative. Katherine Frank's biography goes beyond the surface of those books, revealing a woman both lonely and happy, and a society she both embraced and fled.

Alan Ryan
New York novelist and travel writer

Seeds of Change: Five Plants That Transformed Mankind
Henry Hobhouse
Harper & Row, $19.95

What's this? The history of Africa changed forever by the introduction of maize? America discovered owing to the search for pepper, its War of Independence financed by tobacco?

In a provocative study written "to ask questions, not to answer them," historian Henry Hobhouse has concluded that of some 80 plants or plant transfers occurring in the world since Renaissance times, five have proved significant enough to play a decisive role in history.

Which five bear that honor, or dishonor? The answer is the cinchona tree, sugar, tea, cotton and the potato.

Be advised that his is no dry, pedantic study, but one infused with witty speculation and the courage to suggest new ways of looking at the cause and effect of world events. We may be ripe for such an approach to history; we may at last be tired of Man's arrogant insistence that he alone has been the principal player.

The "what ifs" of history may no longer be fashionable, but Hobhouse begins his relentlessly eclectic study by asking what the modern world would be like if the Incas of South America hadn't discovered the miraculous powers of the cinchona tree, whose bark, when ground to powder, becomes quinine, foremost inhibitor of malaria. With the control of malaria, postulates Hobhouse, so many tropical areas of the globe were made habitable and so many lives saved that the population of India today might otherwise have been 100 million people, instead of 700 million.

With equal confidence, he accuses sugar of bringing about the transatlantic slave trade that made the Caribbean black rather than red, since the native Indians refused to work the cane fields—or died when forced to—and were replaced by black slaves shipped in from Africa. American readers of history tend to associate slavery only with the antebellum South, but in truth it was a way of life in the West Indies for more than a century before. Hobhouse assures us that slavery was still an abomination, claiming that for every ton of sugar consumed in the world, a slave's life was lost.

The first pound of tea arrived in London from China in 1652 and England, if not all of Europe, hasn't been the same since. This is a fascinating chapter of the book, particularly the author's portrayal of the powerful British East India Company and his assertion that for the Company's "pot of tea . . . Chinese culture was very nearly destroyed." "Destroyed" is a harsh word and I suggest you substitute "destabilized" (by the opening of China to the aggressive Europeans), or perhaps "debased" (for the Company's very large part in the opium trade).

The book is full of intriguing information. Although the word "orange" appears on more than half the world's labeling of tea, Hobhouse tells us that it has nothing to do with taste, or even with oranges. Interesting fact number two is that if the handpicking of tea leaves is ever replaced by mechanical picking, high-quality tea could be produced in six American states.

The role played by cotton in this new look at history seems less commanding, possibly because of the plant's dismal association in this country with slavery and the Civil War. But Hobhouse beguiles us here with yet another "what if"—what if Eli Whitney hadn't invented his cotton gin and revived cotton production, which in turn increased the value of field hands? Would the Civil War have been fought?

How about *Solanum tuberosum*, the potato? The author suggests that this humble vegetable is the most influential of the five plants because it altered not only the future of Ireland but the entire composition of America, because of the heavy emigration of Potato Famine Catholics in the mid-19th century.

It's often said that history is a fable that's been agreed upon. Not this history. Author Hobhouse may not always make his case, but he always challenges his reader. Any why not? Why shouldn't botany be considered the big shaker and mover in world history instead of tiresome, traditional Man?

William Dieter
Denver novelist

I Remember: Eighty Years of Black Entertainment, Big Bands, and the Blues
Clyde E. B. Bernhardt as told to
Sheldon Harris
University of Pennsylvania Press, cloth $30; paper $17.95

Jazz is not yet 100 years old (Jelly Roll Morton used to claim that he personally invented it in 1902; the claim was exaggerated but the year was about right), yet already a wealth of history has accumulated around the music. Like most history, the chronicles of jazz deal mainly

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with the kings and the commanders, the heroes and the rebels—the likes of Morton and Louis Armstrong and Duke Ellington and Charlie Parker and John Coltrane. Lesser luminaries of jazz and popular music have won due recognition, too. But very little attention has been paid to the foot soldiers, the almost anonymous rank-and-file players who filled out the bands as they swung through the years from ragtime to bebop and beyond.

Few jazz books mention the name of Clyde E. B. Bernhardt, for example, yet Bernhardt has played in big bands and small bands, in name bands and no-name bands, at society affairs and at rent parties, in clubs run by the mob in Prohibition days, at roller-skating rinks and in walkathons, in an airplane flying over New York City (in 1932, with Marion Hardy and his Alabamians) and in Harlem ballrooms, including one distinguished by its own resident basketball team. He toured with the legendary cornetist King Oliver and accompanied Ella Fitzgerald when she was 16 years old, he recorded "In the Mood" before Glenn Miller did, he worked alongside Dizzy Gillespie and Charlie Parker. And at 80, as this book was published, he was still on the bandstand, false teeth and trombone firmly in place, blowing lip trills and high Cs, hot music in a cool age.

Bernhardt was never a remarkable musician—evidently, not one of "the sharks," as he calls them ("Never considered myself one, just a regular player that could read, fake some, play a good solo—take care of business"). His book, though, makes a remarkable contribution to the story of American music and entertainment.

He has an extraordinary memory and his recollections, clear and precise, range from blues singer Ma Rainey's tent show in 1917 and a band tour of Europe just before the Nazis took over, to a lunch at the White House followed by a performance for President Ronald Reagan at Ford's Theatre in 1982. His descriptions go beyond the bandstand to tell of his North Carolina childhood (in a wooden bungalow ordered by mail from the Sears, Roebuck catalog) and of sweeping the street for a living in Harrisburg, Pennsylvania.

In today's world of show-business glitter and instant stardom, his account of touring the dance-hall circuit on mud roads in ramshackle cars—with the patched suitcases and instruments roped to the

roof, steam spouting from the radiator—sounds like life on another planet. So does his mention of the band's having to eat behind a storeroom curtain so no white customers would see black men being served a meal. Bernhardt's bitterness at racism, however, tends to focus on color prejudice between light- and dark-skinned blacks.

Here is a whole vanished era of show business—carnivals and minstrel shows, circus parades and vaudeville troupes, and entertainers like tap dancer Peg Leg Bates, who performed on a wooden stump, and the celebrated Bill (Bojangles) Robinson, who traveled in a chauffeur-driven Duesenberg and carried a gold-plated pistol. And King Oliver, who turned down a Cotton Club engagement that made Duke Ellington famous. (Oliver, forgotten, wound up as a pool-hall attendant in Savannah, Georgia.)

Bernhardt's career, like jazz itself, spans much of the 20th century. "Somehow it all seems to fit in a kind of bigger picture," he writes. "Perhaps a picture of America." So it does.

David Lancashire
Globe and Mail, Toronto

The Best American Essays; 1986
Edited by Elizabeth Hardwick
Ticknor & Fields, cloth $15.95; paper $8.95

This agreeable miscellany is the first installment in an annual series clearly inspired by, and in design and format similar to, the *Best American Short Stories* volumes that have been appearing since 1915. It contains 17 essays—narrative, argumentative, autobiographical, analytical—by various hands, an eloquently written introduction by Elizabeth Hardwick (herself a superb essayist), brief biographical notes on the authors included, and a welcome alphabetical listing of "Notable Essays of 1985" chosen by series editor Robert Atwan.

The 17 authors include fiction writers, poets, nonfiction essayists, and that suave eluder of categories and genres, the estimable Gore Vidal. Their contributions include personal memoirs, accounts of travels, theoretical considerations of such subjects as contemporary clothing fashions (Anne Hollander's "Dressed to Thrill") and 20th-century global diplomacy (George F. Kennan's "Morality and Foreign Policy"), appreciations of literary personalities and analyses of literary practice, essays on music (jazz and classical alike) and—a nod at sports—a fevered meditation "On Boxing" by the novelist Joyce Carol Oates.

Oates' essay is one of the few pieces herein that, for me, simply don't work. Her investigation of the fight game feels thin and unconvincing. Nor would I recommend Donald Barthelme's "Not-Knowing," a tedious rehash arguing the integrity of the literary invention versus critics' "rage for final explanations," buttressed by a fanciful narrative illustration that's illustrative only of Barthelme at his most sluggishly whimsical. More troublesome is George Kennan's mandarin defense of both pragmatism *and* idealism in statecraft: it's a dauntingly theoretical essay, shot through with generalization and aphorism, mercilessly short on helpful specific detail.

Most of the essays, however, contain vivid and memorable writing. William Gass' impressionistic "China Still Lifes," about a trip to Beijing, neatly contrasts traditional orderliness with the "glorious and healthy tumult" observable through-

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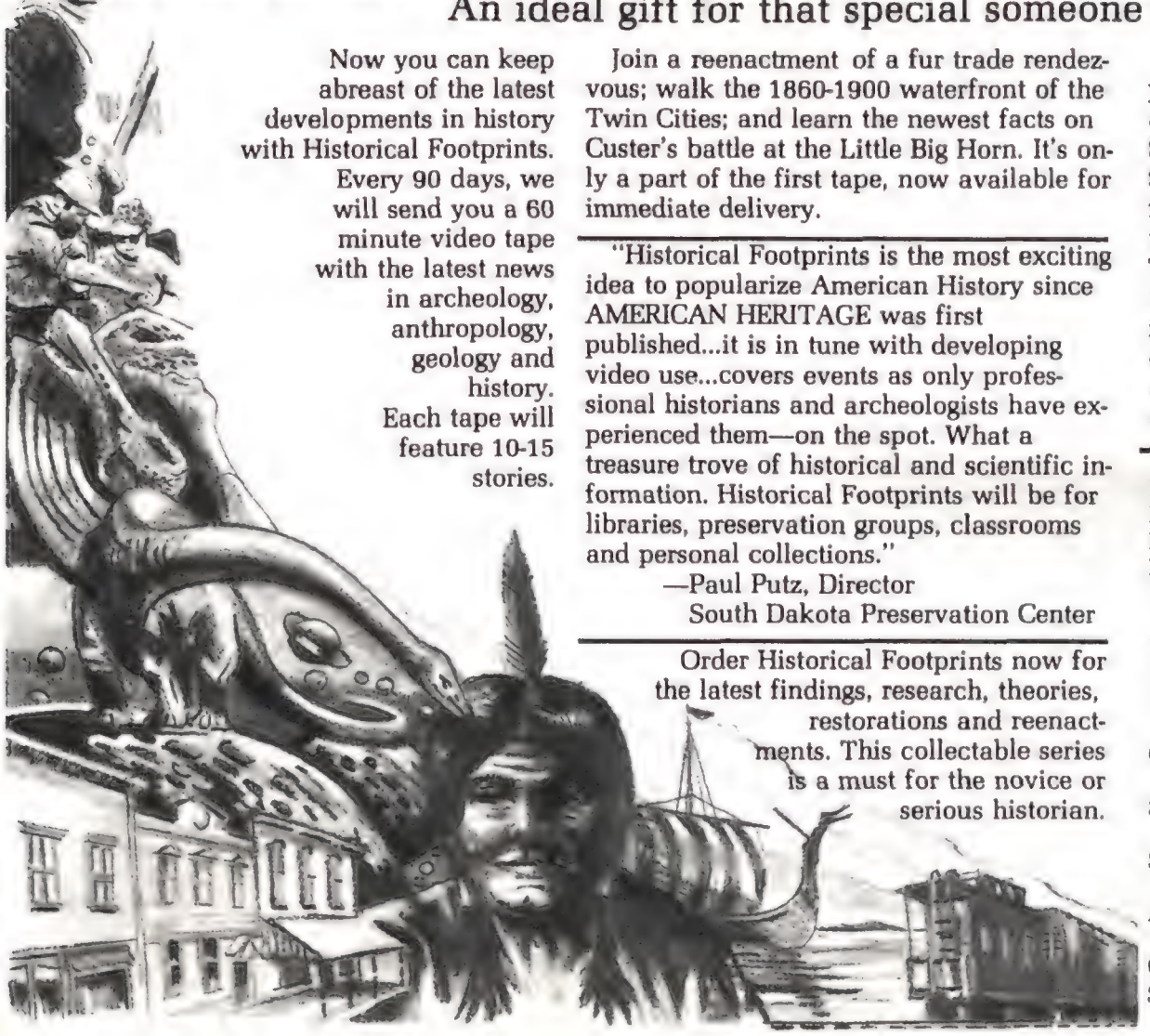

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out Chinese society. Edward Rothstein's "The Body of Bach," a tercentenary tribute which begins as a learned ramble, eases, gratifyingly, into an illuminating analysis of the religious roots of this incomparable creator's oeuvre. Vidal's "On Italo Calvino" is an informed and generous valediction to the eminent Italian writer lately deceased (1985), in which the Vidalian talent for amusing mischief at the expense of contemporary culture icons is elegantly interwoven with his praise of his subject. It's vintage Vidal, exhilarating and entertaining.

Two are essays I won't forget. Joseph Brodsky's "Flight from Byzantium" develops from his visit to Istanbul a vision of the historical Constantinople and the permutations of historical, religious and artistic progress that make it romantically remote from, and also essentially connected with, our own turbulent age. The result is rich and intricate beyond summary, almost beyond description.

In "The Passing of Jazz's Old Guard," Gerald Early argues—movingly, and in a manner reminiscent of James Baldwin's passionate tough-minded essays—that musicians Charles Mingus, Thelonious Monk and Sonny Stitt, "the old bebop cats . . . bore witness to the terrors and anxieties of the young black male coming of psychological age in America." His investigation into their lives and their music is a thought-provoking piece of cultural history.

Can conclusions be drawn, on this volume's evidence, about the "state of the essay today"? Probably not many. We see considerable stylistic variation. The plain style predominates. But there are also rich rhetorical displays—most notably Cynthia Ozick's refreshingly colorful remembrance of her days among the "literary young" at New York University ("The First Day of School: Washington Square, 1946").

The best thing about *The Best American Essays* is its (their) unpredictability and variety. Elizabeth Hardwick's introduction contends that the essay "is not altogether genuine in its shape, like fiction or poetry." Therein lies the form's greatest strength and its attraction. This is an idea whose time came some time ago (it's hard to believe the series wasn't begun years earlier). Congratulations to Mr. Atwan and Elizabeth Hardwick and to future guest editors (whoever they turn out to be). And thanks.

Bruce Allen
Literary critic

Additional reading

Shopping malls (p. 34)

The Malling of America: An Inside Look at the Great Consumer Paradise by William Severini Kowinski, Morrow, 1985

The Mall: An Attempted Escape From Everyday Life by Jerry Jacobs, Waveland Press (Prospect Heights, Illinois), 1984

Centers for the Urban Environment: Survival of the Cities by Victor Gruen and Larry Smith, Van Nostrand Reinhold, 1973

"Mega Mall: Shopping and Show Biz Blend in Giant Center At Edmonton, Alberta" by Leonard Zehr, *Wall Street Journal*, October 7, 1985

Fra Angelico (p. 46)

Fra Angelico by John Pope-Hennessy, Cornell University Press, 1974

History of Italian Renaissance Art by Frederick Hartt, Abrams, 1980

Renaissance Florence by Gene A. Brucker, University of California Press, 1983

Painting and Experience in 15th Century Italy by Michael Baxandall, Oxford, 1974

Sherlock Holmes (p. 60)

The Annotated Sherlock Holmes by Sir Arthur Conan Doyle, edited by William S. Baring-Gould, Crown, early 1987

The Baker Street Journal (periodical), edited by Philip A. Shreffler, Fordham University Press (New York)

The Private Life of Sherlock Holmes by Vincent Starrett, AMS Press (New York), 1971

The Encyclopaedia Sherlockiana, edited by Jack Tracy, Doubleday, 1977

Underwater archaeology (p. 72)

Archeology under Water: An Atlas of the World's Submerged Sites, edited by Keith Muckelroy, McGraw-Hill, 1980

Man 12,000 Years Under the Sea: A Story of

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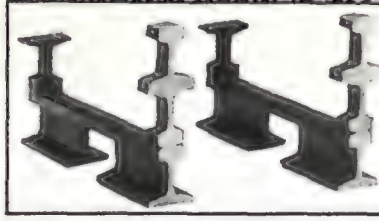

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Special December exhibits and events

National Museum of American History
The Trees of Christmas (mid-December-early January 1987) A dozen trees decorated in favorite past themes and a new theme tree, "Christmas Critters."

National Museum of American Art
James Rosenquist: Paintings 1961-1985 (through January 11, 1987) Retrospective (See *Mall*, page 22).

Cooper-Hewitt Museum (New York)
Recollections: A Decade of Collecting (through March 1, 1987).
Milestones: 50 Years of Goods and Services (through January 4, 1987).
Perspective: The Illusion of Space (through March 1, 1987) Drawings, prints, peep shows, printed fabrics.

Renwick Gallery
Russia, The Land, The People: Russian Painting 1850-1910 (through January 5, 1987).

Hirshhorn Museum & Sculpture Garden
Recent Acquisitions: 1983-1986 (through March 1, 1987).

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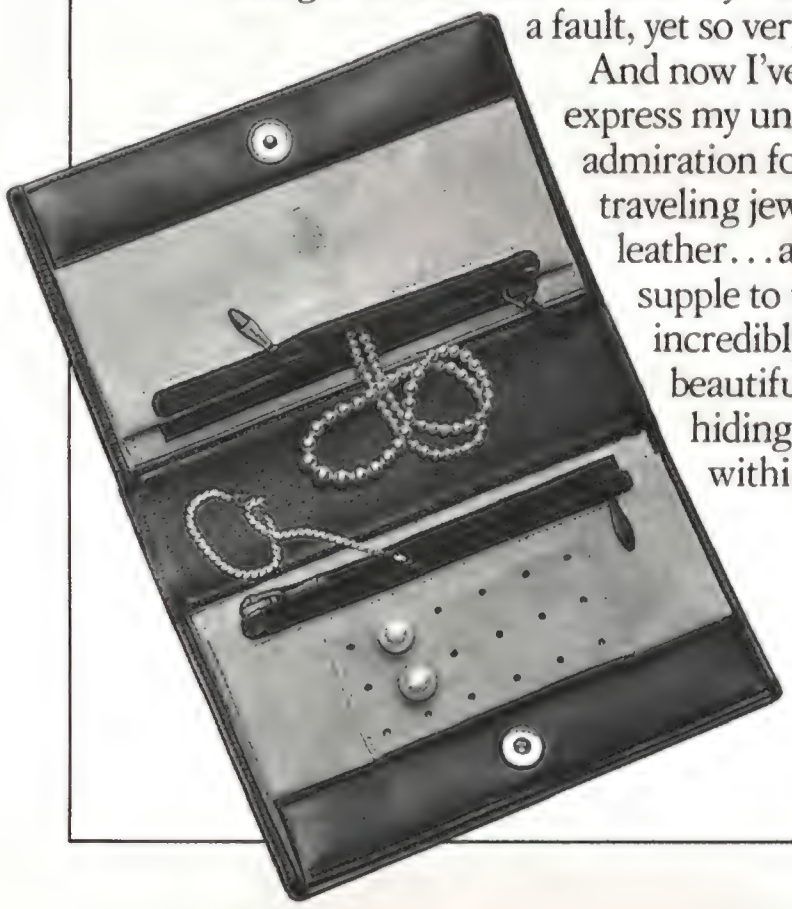

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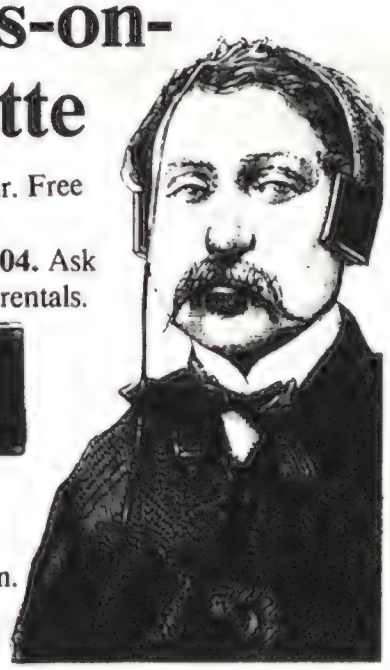

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At the Renwick Gallery: *Autumn Bouquet, Portrait of Vera Repina.*

National Air and Space Museum

The Air War in Vietnam (December 4; 7:30 P.M., Langley Theater) Lecture by Col. Steven Ritchie, USAF (Reserve).

Other December events

Smithsonian on the air

Radio Smithsonian: Features on this weekly half-hour series include a Smithsonian celebration of the holiday season and a look at two 19th-century explorers. *Smithsonian Galaxy*: Short radio features. *Here at the Smithsonian . . .*: Short TV features go behind the scenes at the Smithsonian.

To find out what stations in your area carry these radio and TV programs, write: Office of Telecommunications, MAH Room BB40, Washington, D.C. 20560.

Resident Associate Program

To become a Resident Associate, or to find out about the many other activities presented monthly, or for fee and ticket information, call 357-3030. Here are some December events:

Art of Biography (December 6) All-day seminar with biographers Marc Pachter, Phyllis Rose and David McCullough.

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(signed) Carey O. Randall
Associate Publisher, Administration

Le Jeu de Robin & Marion—A Holiday 'Bon Bon' (December 7; 7 P.M.) Performance by Anonymous, a French Canadian ensemble.
Smithsonian Chamber Players (December 9, 10; 8 P.M.) With pianist Jos van Immerseel.
Continuity and Change: Calendrical Rites in the Soviet Union (December 17; 8 P.M.) Lecture by Natalia Sadomsky.
A Dickens of a Christmas (December 17; 6:30 P.M. and 8:30 P.M.) Performance by Interact, a theater company.

Musical Weekend

The 15th Smithsonian Musical Weekend will be held May 1-3, 1987. Watch the January issue for details.

Exhibition catalogs

Catalogs available at this time include:
Russia, The Land, The People: Russian Painting 1850-1910 (paper, $19.95)
Engines of Change: The American Industrial Revolution, 1790-1860 (cloth, $39.95; paper, $19.95)
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Bakersfield, California (December 6-January 4, 1987) *Family Folklore*, Kern County Museum.
Miami, Florida (December 9-February 25, 1987) *Hollywood: Legend and Reality*, Center for the Fine Arts.
Rockville, Maryland (November 29-December 28) *Recent American Works on Paper*, Montgomery College Art Department.
Sioux City (December 27-January 25, 1987) *Baseball Immortals: The Photographs of Charles Martin Conlon, 1905-1935*, Sioux City Public Museum.
Washington, D.C. (November 22-January 4, 1987) *Gauguin and His Circle in Brittany: The Prints of the Pont-Aven School*, Phillips Collection (See *Highlights continued*, page 164).

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Highlights continued

Printmaking at Pont-Aven

Between 1886 and 1895, Paul Gauguin spent most of his summers at Pont-Aven, a small, picturesque village on the south coast of Brittany in France. To his side flocked a handful of admirers, including Emile Bernard and Paul Sérusier. At this artists' colony, the group explored the "Synthetist" style, which was characterized by flat, abstract forms (they especially admired Japanese prints), rhythmic patterns and harmonious colors. The people of Brittany—with their starched hats, wooden shoes and strong religious beliefs—provided rich subject matter.

Because one of the aspects of the style was fluidity of line, the artists experimented with printmaking in addition to painting. Most of them preferred lithography, drawing freely on the surface of a zinc plate or a stone.

Until recently, the prints of these Pont-Aven artists remained largely unknown because so few were made. But for 30 years collector Samuel Josefowitz has been amassing the largest collection of them. From this group, 85 works can now be seen for the first time in this country in an exhibition organized and circulated by SITES. "Gauguin and His Circle in Brittany: The Prints of the Pont-Aven School" is now on view at the Phillips Collection in Washington, D.C., after which it will travel to Detroit, New York, Cleveland and other cities.
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La Fin du jour, a lithograph on canary yellow paper, is by Paul Sérusier, 1893.

Willowy figure of Bernard's *Solitude* prefigures artist's later work in Egypt.

Emile Bernard's *Bretons dans une barque* is a zincograph colored with gouache.

Gauguin's *Les Drames de la mer*, 1889, is Japanese in style.

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Okefenokee Swamp and Suwannee River April 4-11: Canoe and camp in this wilderness sanctuary for millions of singing creatures.

Arizona in Spring April 12-20 or 22-30: Tour the Sonoran Desert and Chiricahua Mountains to see many species of unique Southwestern wildlife.

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Delta Queen April 16-24: Take a steamboat journey into America's past on the lower Mississippi from New Orleans to Memphis.

New York May 14-17: Enjoy a weekend of architectural walks, dining, theater and museum visits in the Big Apple.

New England and Hudson River Cruise May 30-June 13: Aboard the *Newport Clipper*, sail along the New England coast and up the Hudson River.

Bryce, Zion and the North Rim of the Grand Canyon June 4-14: Hike canyon trails to admire foliage, wildlife and geological history.

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Yucatán Adventure February 12-24: Explore extraordinary Maya ruins in the company of a pre-Columbian archaeologist.

Costa Rica February 21-March 6: An expedition for nature enthusiasts to see flora, birds and wildlife in the American tropics.

Voyage to the Islands of the South Pacific February 21-March 10: Aboard the *Illiria*, travel from New Guinea to Fiji through three great island groups. Observe diverse cultures and traditional art; enjoy striking natural beauty.

Zapotec and Maya Mexico February 26-March 10: Traveling from the central highlands to the Yucatán Peninsula, discover ancient ruins and colonial cities.

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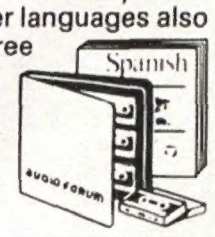

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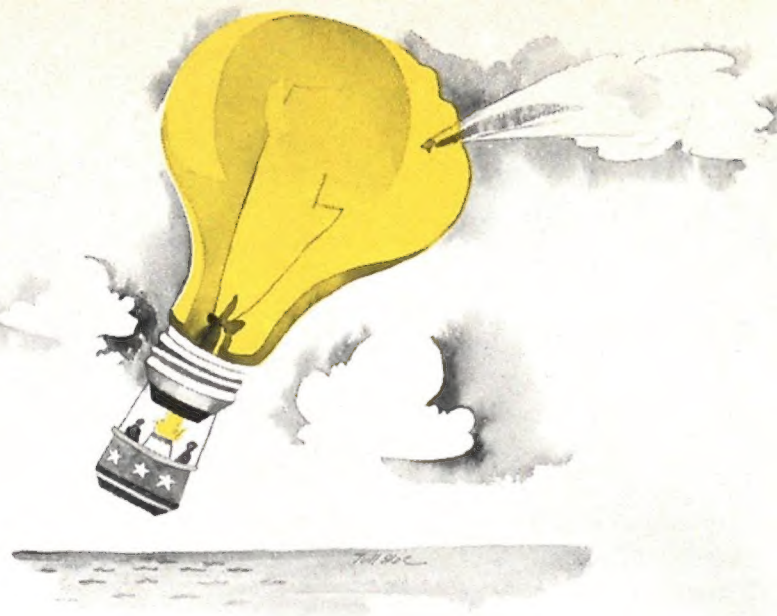

See a problem. Rivet together a solution. Market it!

That's the American Way. If this country ever had a native form of expression, it wasn't the epic poem or the symphony. It was the patent.

Take Abraham Lincoln. Back in 1849, when America's freight mostly moved on rivers and canals, he applied for a patent on a device for lifting vessels over shoals. Later, of course, the Great Emancipator moved on to other things, but he embodies the American's ingrained urge to create contraptions. As J. Morgan Greene, vice chairman of the U.S. Patent Model Foundation, puts it: "We were a nation of tinkerers, and our inventions dazzled the world."

In tinkering's heyday, the 19th century, you never knew what your neighbor might be up to in his workshop. Consider Alpheus Myers, M.D., of Logansport, Indiana, a seemingly ordinary dispenser of tablets and tonics who, in 1854, dazzled—if not the world—certainly his friends and patients by patenting the stomach trap for tapeworms.

The patient had to fast—to make the tapeworm hungry—then swallow the tiny, baited trap. A long string attached to the trap hung out of the patient's mouth. As the tapeworm nosed into the trap to get the bait, a spring-powered gripper caught its neck. Then the physician victoriously hauled up the trap and the tapeworm.

Unfortunately, the trap never really caught on. Perhaps it was premature. But the Patent Office's files bulge with such stunning solutions to problems that the world perceives as uncompelling, or fails to perceive at all.

There was, for instance, the alarm clock that squirts the sleeper's face, so that even the soundest snoozer need never be late for work. Also on file is a parakeet diaper and a dimple maker, too, just the thing for an insufficiently winsome teenager. And every golfer who has ever thrashed through tall grass hunting for a lost ball will appreciate this one: a golf ball that, upon landing, sends up smoke signals.

True, none of these bright ideas made it into inventing's big time, joining the automobile, the computer, paper clips, earmuffs, frozen orange juice, electric guitars and that symbol of the inventive mind at work, the light bulb. But they do express a certain spirit.

Years ago, watching the Movietone News clips at our local Bijou, I was awestruck by the feisty chaps who aspired to fly like birds, with artificial wings. In grainy black and white, they would run down a road, flapping and leaping, inevitably collapsing in a cloud of dust. Broken-winged but undaunted, they would explain it was only a loose oscillating tension strap and that they'd be back in six months, ready to flutter above the housetops like chimney swifts.

That's the old American spirit—optimistic, aspirant, busy, bristling with ideas that, if not absolutely mothered by necessity, are at least harmless and wild.

Currently, however, Yankee inventiveness seems to be in a dip. Not only has the number of U.S. patents awarded to foreigners quadrupled in the past 25 years—from 11 percent in 1961 to 44 percent in 1985—but we are leaning away from tangible gadgets and gizmos toward the invention of mere concepts.

Inventors of the past, knights of the glowing light bulb, gave us such elegant solutions as the coat hanger, mothballs, recipe-book stands, glue in a tube, tacks, and pencils with erasers on them. Today, on the other hand, we tend to be into things like the "nerd" movie and everything "lite"—lite beer, lite soda and even lite FM, with the music's heavy bass notes erased. You can buy "lite literature," abridged classics on audio cassettes that the publisher promises offer "Ten Classics in Ten Minutes."

Concepts can be exciting, of course. For instance, little Winooski, Vermont, suffering from lite revenues, has invented a remedy: taxing neighboring Burlington's airport because its planes fly through Winooski's airspace. This it assessed at $3,563,000 when it sent Burlington a neighborly tax bill for $90,222.

In any case, the U.S. Patent Model Foundation has announced a "Rekindle the Spirit" campaign to get American inventive juices flowing again (*Around the Mall*, November 1986). Things are looking up already. For instance, Adolph Goldfarb, of Westlake Village, California, has patented a bird-shaped box containing a solar-powered microchip sound synthesizer. As the sun rises, the electronic bird switches on and sings "Oh, What a Beautiful Mornin'."

As any recipient of electronics catalogs knows, the whole field of gadgetry is coming back. Hammacher Schlemmer offers solar-powered, fan-cooled hats. Other catalogs offer the "Shower & Sing" waterproof radio. Tinkerers' hearts leapt at this year's National Hardware Show, where exhibits included lightweight plastic pitchforks, presumably for farmers who have neglected their biceps.

American inventiveness will have to hustle, though, if we are to keep ahead of other countries. British chemist David E. H. Jones, for instance, has proposed in the journal *New Scientist* a "strategic gravel defense": a few thousand tons of magnetized gravel orbited in space along potential ICBM corridors.

A Scottish firm just patented a fiber-optic carpet that glows under your feet. And Edward Furze, of Lozanne, France, proposes using detonation to create ersatz cyclones—just the thing for that meteorology buff on your Christmas list who already has a barometer.

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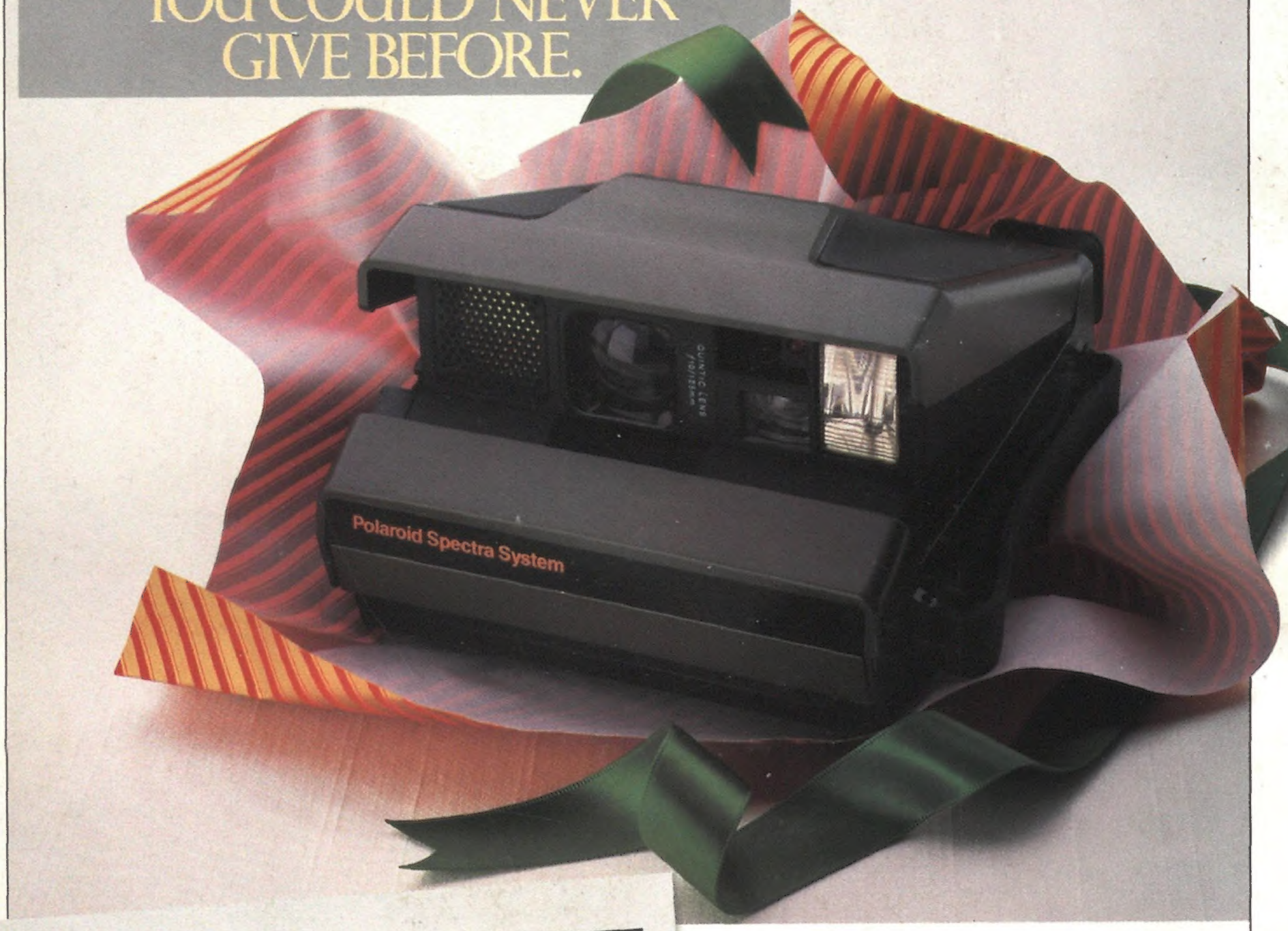

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